United States Court of Appeals
for the
District of Columbia Circuit

TRANSCRIPT OF RECORD

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Court of Appeals of the District of Columbia

APRIL TERM, 1930

876

No. 5227

SPECIAL CALENDAR

SHORTWAVE & TELEVISION LABORATORY, INC.,
APPELLANT,

vs.

FEDERAL RADIO COMMISSION.

APPEAL FROM THE FEDERAL RADIO COMMISSION.

FILED JUNE 4, 1930.

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Court of Appeals of the District of Columbia

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Court of Appeals of the District of Columbia

No. 5227.

SHORTWAVE & TELEVISION LABORATORY, INC., Appellant,
v.
FEDERAL RADIO COMMISSION.

1 In the Court of Appeals of the District of Columbia.

No. 5227.

SHORTWAVE & TELEVISION LABORATORY, INC., Appellant,
v.
FEDERAL RADIO COMMISSION, Appellee.

Notice of Appeal and of the Reasons Therefor.

I. Now, this fourth day of June, 1930, comes Shortwave & Television Laboratory, Inc., a corporation of the State of Massachusetts, applicant-appellant in these proceedings and says it is aggrieved by an order of the Federal radio commission entered on or about May 16, 1930, effective said day, refusing its application numbered 1-P-B-924 (docket numbered 745) for a construction permit for the erection of a radio broadcasting station at Boston, Massachusetts, to operate at a frequency of 1370 kilocycles, one-half time, to share time with station WLEY, with a power of 100 watts at night and 250 watts during the day.

Wherefore, appellant hereby gives notice of its appeal from said decision to the Court of Appeals of the District of Columbia and assigns in support thereof the reasons for appeal hereinafter set forth.

SHORTWAVE & TELEVISION
LABORATORY, INC.,
By BETHUEL M. WEBSTER, JR.,
BETHUEL M. WEBSTER, JR.,
PAUL M. SEGAL,
PAUL M. SEGAL,
Its Attorneys.

2 II. *Reasons for Appeal.*

A. Statement of the Proceedings.

This case grows out of the refusal by the commission of appellant's application for a permit for the construction of a radio broadcasting station at Boston, Massachusetts, to operate at a frequency of 1370 kilocycles, half-time, with an output power of 100 watts at night and 250 watts during the day, a "local" station under the commission's classification.

Appellant is a responsible, adequately financed corporation, engaged in the manufacture of radio apparatus and in the transmission of radiovisual programs from station W1XAV at Boston, Massachusetts.

For some time prior to March 13, 1930, a radio broadcasting station known as WLEY was licensed to operate one-half time on the local assignment of 1420 kilocycles at Lexington, Massachusetts, adjacent to Boston. The remaining one-half time assignment to that frequency was vacant. Appellant made application for a construction permit for the erection of a station to occupy this vacancy. Shortly prior to March 13, the frequency of WLEY was changed by the commission from 1420 kilocycles to 1370 kilocycles, again with one-half time and again leaving a vacancy in the allocation. On March 13, appellant by letter amended its application as for 1370 kilocycles and on March 24, filed a formal amended application requesting the designation of that frequency.

Hearing on this application was held before Hon. E. O. Sykes for the Commission on May 8, 1930 and its refusal of the same was made known May 18.

The commission either has not rendered or has not made
known to appellant any decision upon said applica-
3 tion and hearing nor has it announced any statement
of the "grounds for decision as found and given by
it," as required by law pursuant to which an order of denial might properly be entered; nor has it made any decision on reserved rulings, question of law or fact presented by the application, hearing and record.

At the hearing held May 8, appellant offered testimony establishing certain ultimate facts. No testimony (other than a list of all broadcasting stations in the United States) was offered by or on behalf of the commission. A representative of station WLEY was permitted to appear and testify to certain immaterial and incompetent matters. The commission declined to rule upon appellant's objections to portions of said testimony, stating that ruling would be reserved. Such ruling has not yet been made or announced although appellant's application has been denied.

The testimony of appellant conclusively established certain facts which were not denied, contradicted or in any manner controverted at the hearing:

1) Appellant has adequate financial, technical and personnel resources for the erection and operation of the proposed station.

2) The programs to be given over the proposed station would be of general public interest and of good quality; no advertising, commercial or phonograph record programs would be given.

3) There is a vacancy of one-half time on the 1370 kilocycle channel which is unoccupied. Station WLEY has not had full time on this frequency or on its prior frequency of 1420 kilocycles and only used a few hours during the morning for the broadcasting of phonograph records. WLEY has filed no application for full time. The owners of that station have also a regional station, WLEX, of
higher power at the same location as WLEY, which
4 does not use the full time licensed to it.

4) Even under the theory followed in the commission, the State of Massachusetts does not have its fair and equitable proportion of the facilities assigned to the First Zone, of which Massachusetts is part, as required by law. The granting of this application would still leave the State much under-assigned.

5) Appellant is regularly engaged in rendering a high type of radiovisual programs from its station W1XAV to a growing audience of "lookers in." These programs have developed a wide and intense interest but appellant is handicapped by the lack of aural accompaniment which is necessary to give vitality and interest to the programs, to make full use of available program material (such as sound film, orchestras, dramatic works, etc.), to properly develop interest in television among broadcast listeners and for other purposes indicated in the record.

6) The necessary aural channels are available only in the broadcast band (550-1500 kcs.); in Boston, such a channel is available to appellant only by means of the facility now requested.

7) The use of the requested facility in providing a sound channel for radiovisual programs would be so conducted by appellant that it would not lessen the interest of the programs when received by ear alone by the ordinary broadcast listener.

8) The operation of the proposed station would not result in interference with nearby receiving sets.

Upon these and other facts demonstrating that the proposed station would serve public interest, convenience, and necessity, the commission, without any evidence whatsoever to controvert said showing and in spite of the fact that said showing was complete and convincing, nevertheless refused the application. In announcing its said refusal, prior to the preparation or execution of the order of denial herein complained of, the commission stated and announced that
it had denied an application of appellant to erect a
5 station "to share time with WLEY and WSSH," al-
though WSSH operates on another and different frequency than that requested by appellant, thereby indicating an impression in the minds of the commissioners at the time the announcement was made, that WSSH was operating on the frequency requested and that the assignment was fully occupied.

On May 27, 1930, appellant directed attention of the commission to this fact by a formal motion to reconsider, which the commission denied on May 29, 1930.

If there be any purported facts or reasons for which the commission has denied appellant's application those purported facts or reasons have not been presented at any hearing or proceeding at which appellant was present or represented or had any opportunity of cross-examination, or of offering explanatory evidence, or evidence in contradiction.

This applies also to the statement of decision which will be prepared, and filed in this case by the commission after the taking of this appeal.

B. Specifications of Error.

1) The order of the commission denying appellant's application is made contrary to the evidence, is without evidence to sustain it and is abitrary, unreasonable and capricious.

2) The evidence before the commission was such that no other conclusion could be drawn therefrom save that the granting of appellant's application is in the public interest, convenience, and necessity and hence the commission was without power to deny said application.

3) The order of the commission, if it could be sustained
upon any facts or reasons at all, would be based upon facts
and reasons not presented at any hearing at which
6 appellant was present or represented or had an op-
portunity of cross examination or of offering ex-
planatory evidence or evidence in contradiction.

4) The commission erred in refusing to rule upon objections to testimony made by appellant and in placing said objectionable testimony in the record for the consideration of its members.

5) The commission erred in refusing to grant appellant's motion to reconsider.

6) The commission erred in failing to announce its decision or to state the grounds for its decision as required by law, thus depriving appellant of his substantial rights upon appeal and attempting to establish an unlawful proceeding upon appeal by means of which the commission can seek out new reasons for denying appellant's application after the appeal has been taken and depriving appellant of his right to know the commission's grounds of decision in preparing his papers.

7) The commission erred in other particulars apparent from the record.

III. *Revision Requested.*

Wherefore appellant prays an order of this Court that it was on May 8, 1930, and now is, entitled to a construction permit for the erection of a "local" broadcasting station at Boston, Massachusetts, to operate at a frequency of 1370 kilocycles, with a power of 100 watts at night and 250 watts during the day, to share time with station WLEY, and directing the commission to issue the same forthwith.

SHORTWAVE & TELEVISION LABORATORY,
INC.,
By BETHUEL M. WEBSTER, JR.,
BETHUEL M. WEBSTER, JR.,
PAUL M. SEGAL,
PAUL M. SEGAL,
Its Attorneys.

7 IV. *Notice to the Federal Radio Commission.*

The Federal Radio Commission will please take notice that the foregoing notice of appeal and reasons therefor will be filed forthwith in the Court of Appeals of the District of Columbia, pursuant to the provisions of the Radio Act of 1927, as amended.

BETHUEL M. WEBSTER, JR.,
BETHUEL M. WEBSTER, JR.,
PAUL M. SEGAL,
PAUL M. SEGAL,
Attorneys for the Appellant.

8 V. *Certificate.*

WASHINGTON,
District of Columbia, ss:

The undersigned, Paul M. Segal, personally appearing before me, a Notary Public in and for the District of Columbia, being sworn, says that he is one of the attorneys for Shortwave & Television Laboratory, Inc., appellant herein, and that the foregoing is a true copy of the notice of appeal and reasons therefor to be filed forthwith in the Court of Appeals of the District of Columbia.

PAUL M. SEGAL.
PAUL M. SEGAL.

Subscribed and sworn to before me this 4th day of June, 1930.

[Seal of Estelle R. Remey, Notary Public, District of Columbia.]

ESTELLE R. REMEY,
Notary Public.

My commission expires January 9, 1935.

9 VI. *Acknowledgment of Service.*

Service of a certified copy of the foregoing notice of appeal and reasons therefor is acknowledged, this 4th day of June, 1930.

FEDERAL RADIO COMMISSION,
By JAMES M. BALDWIN,
Secretary.

10 [Endorsed:] In the Court of Appeals of the District of Columbia. No. —. Shortwave & Television Laboratory, Inc., appellant, vs. Federal Radio Commission, appellee. Notice of Appeal and of the Reasons Therefor. Law Offices Donovan & Bond, 1010 Shoreham Building, Washington, D. C.

11 In the Court of Appeals of the District of Columbia.

No. 5227.

SHORTWAVE & TELEVISION LABORATORY, INC., Appellant,

v.

FEDERAL RADIO COMMISSION.

Statement of Facts and Grounds for Decision of the Federal Radio Commission.

Preliminary Statement.

This is a proceeding under Section 16 of the Radio Act of 1927, as amended. It is in this Court by reason of an appeal taken by appellant from an order of the Federal Radio Commission, hereinafter referred to as the Commission, dated May 16, 1930, denying appellant's application for a construction permit for a proposed radio broadcasting station at Boston, Massachusetts, to be operated from 7:00 to 11:00 p. m. daily at a frequency of 1370 kilocycles and with a power of 100 watts at night and 250 watts during daylight.

Proceedings.

Appellant's original application dated September 14, 1929 requested the assignment of 1420 kilocycles, 100 watts power at night and 250 watts power in the daytime. The hours of operation specified were: "Mon., Tue., Wed., Thurs., Fri., Sat., 12 noon to 5 p. m.; Mon., Tue., Wed., Thurs., 11 p. m. to 1 a. m.; Sat., 7:30 p. m. to 9 p. m."

Subsequently an amended application was filed, 12 dated March 20, 1930. Said amended application requested a frequency of 1370 kilocycles, the same power assignment, and specified the hours of 7:00 to 11:00 p. m. daily as the hours to be operated. At the time of the filing of said original application Station WLEY, located at Lexington, Massachusetts, was licensed for operation one-half time on said frequency of 1420 kilocycles, the remaining one-half time not being assigned for use by any other station in that particular vicinity. On March 2, 1930 the license of Station WLEY was modified by a change in frequency assignment from 1420 kilocycles to 1370 kilocycles. Appellant, on or about March 24, 1930, filed its amended application requesting the right to construct a station to be operated on 1370 kilocycles with hours of operation from 7:00 to 11:00 p. m. daily.

A hearing was held on said amended application on May 8, 1930 and upon consideration of the evidence and arguments presented at this hearing, viewed in the light of the present engineering developments with relation to television and, further, in the light of its regulations and policies, the Commission found that public interest, convenience or necessity would not be served by the granting of the application and, therefore, on May 16, 1930, directed that an order be entered, reciting said finding and denying said application. A copy of said order was duly mailed to appellant and another copy was mailed to appellant's counsel.

Statement of Facts an Grounds for Decision.

From the application and the evidence and arguments presented to it at the hearing the Commission found:

13 1. Appellant is an adequately financed and well equipped corporation engaged in the business of manufacturing radio apparatus, including television receiving apparatus. Appellant also operates W1XAV, an experimental visual broadcasting station.

2. Appellant desires the use of a frequency in the broadcast band as a "sound track" or channel to be used in conjunction with its experimental visual broadcasting station for the purpose of transmitting sound effects to accompany radio-visual broadcasting from Station W1XAV.

3. WLEY broadcasts only one-half time on the frequency 1370 kilocycles. This is necessary because of the operation under a time-sharing arrangement on the frequency 1410 kilocycles of Stations WLEX and WSSH. By reason of the latter stations being separated only 40 kilocycles from the channel of WLEY a time division was necessary in order to prevent interference which would result from the simultaneous operation of WLEY and either WLEX or WSSH . The operation of appellant's proposed station therefore would cause interference with the latter two stations, and because of the hours requested would prevent any one or all three of said stations from satisfactory operation between 7:00 and 11:00 p. m. daily.

4. In so far as practicable the State of Massachusetts has been allotted its fair and equitable share of broadcasting facilities as required by law. While it does not have its full quota of local station assignments it has an excess of regional station assignments.

5. Appellant is now using the broadcasting facilities of Station WEEI during certain evening hours and therefore is not deprived entirely of the use of sound facilities.

In order properly to present the Commission's grounds for decision it is necessary to discuss the engineering questions as well as the questions of administrative policy presented by the application in this case.

First, in the assignment of frequencies to broadcasting stations the Commission has adopted and adhered as nearly as possible to certain engineering standards. Among them is one pursuant to which a frequency separation of at least 50 kilocycles is maintained between stations operating simultaneously in the same geographical
14 vicinity. Where such frequency separation cannot be maintained it has been found necessary for stations operating in the same city or town or in the same geographical vicinity to divide time. Such time division was found necessary in the case of Stations WLEY, operating on 1370 kilocycles, and WLEX and WSSH, operating

on 1410 kilocycles (40 kilocycles away), all in the City of Boston. If appellant were proposing merely a new broadcasting station to be operated on 1370 kilocycles during any of the hours at which one or more of the three stations above mentioned were operating the Commission would have felt itself bound by its policy to deny said application. The operation of appellant's proposed station would conflict with the operation of the stations above mentioned to the same extent as a regular broadcasting station.

Second, that spectrum of frequencies from 550 kilocycles to 1500 kilocycles has been set aside for broadcasting stations. None of the frequencies within that spectrum has ever been designated by law or international treaty or by regulation of the Commission for use as a sound track for programs to be synchronized with radio visual broadcasts. Furthermore, appellant's visual broadcasting station W1XAV is operated under an experimental license. Television is in a highly experimental stage of development. All licenses for visual broadcasting stations issued by the Commission are on an experimental and temporary basis. The Commission, on December 22, 1928, first designated frequencies to be used for such purposes. Under paragraph 1(b)3 of General Order No. 55, adopted on that date, the Commission designated the frequencies 2002 to 2300 kilocycles, inclusive, and 2750 to 2950 kilocycles, inclusive, for "experimental visual broadcasting." Subsequently, on October 11, 1929, the Commission amended and
revised its General Order No. 55 by adopting General
15 Order No. 74. General Order No. 74 designated
the frequencies to be used for experimental visual broadcasting as follows:

> "The frequencies 2000 to 2200 kilocycles, inclusive, and 2750 to 2950 kilocycles, inclusive. The frequencies 2200 to 2299 kilocycles, inclusive, provided that such use will not cause interference with radio services in other North American countries."

For the purposes of this case it is not material what frequencies are used or what regulations were made for visual broadcasting except in this: that all regulations touching this subject up to the present time have regarded visual broadcasting as experimental only. For this reason the

Commission felt that the time had not yet come for the adoption of a policy or regulations whereby "sound tracks" should be provided to accompany television or visual broadcasting.

Third, this particular case is complicated by the fact that the application for 1370 kilocycles was not in the nature of an application for the temporary experimental use of the channel involved but really proposed the establishment of a new broadcasting station without reference to the temporary experimental nature of the radio visual broadcasting station in connection with which the proposed station was to be operated.

Fourth, due to the experimental nature of visual broadcasting and due to the fact that the manufacture of radio visual receiving sets is still highly experimental, and due further to the fact that only a limited number of such receiving sets are on the market and few, if any, of them are of any practical worth other than as a curiosity or novelty, public interest at this time does not require the adoption of regulations providing for sound accompaniment for visual broadcasting. Television is not yet ready to offer to the public as a whole. It is not yet possible to foresee
exactly or with any degree of certainty just what
16 engineering developments will take place in this
highly technical field of radio activity.

Fifth, one of the primary reasons for this application was admitted by appellant to be an effort to secure a medium for the direct promotion of the sale of television receivers manufactured by appellant. The Commission did not regard this as a ground for denial of the application, yet the Commission felt that this fact alone, or taken in connection with the other facts here involved did not constitute a sufficient showing that public interest, convenience or necessity would be served by the granting of appellant's aplication.

Finally, because of the limited number of television receivers, the primary purpose the proposed station would serve, would be that of another local broadcasting station in the City of Boston. While it is true that the State of Massachusetts under appellant's interpretation of the law might be entitled to more local stations, it is also true that the City of Boston has a large majority of the broadcasting facilities of the State of Massachusetts; i. e., has more than its fair and equitable share of said facilities, while many other cities and towns in the same state are not nearly as adequately served as is the City of Boston.

For the reasons given and upon the grounds set forth the Commission denied appellant's application.

Respectfully submitted,
FEDERAL RADIO COMMISSION,
By C. McK. SALTZMAN,
Chairman.

17 *Notice.*

To Paul M. Segal, Esq.,
Attorney for Appellant,
Shoreham Buiding,
Washington, D. C.:

Please take notice that the foregoing Statement of Facts and Grounds for Decision and Record will be filed this day in the Court of Appeals of the District of Columbia.

ELMER W. PRATT,
Attorney for Federal Radio Commission.

June 30, 1930.

18 [Endorsed:] No. 5227. In the Court of Appeals of the District of Columbia. Shortwave & Television Laboratory, Inc., Appellant, v. Federal Radio Commission. Statement of Facts and Grounds for Decision. Federal Radio Commission. Thad H. Brown, General Counsel. Duke M. Patrick, Assistant General Counsel. Elmer W. Pratt, Assistant Counsel. Filed Jun. 30, 1930. Court of Appeals, District of Columbia. Henry W. Hodges, Clerk.

19 Court of Appeals, District of Columbia. Filed Jun. 30, 1930. Henry W. Hodges, Clerk.

In the Court of Appeals of the District of Columbia.

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20 In the Court of Appeals of the District of Columbia.

No. 5227.

Shortwave & Television Laboratory, Inc., Appellant,

v.

Federal Radio Commission.

Certificate.

I, James W. Baldwin, Secretary of the Federal Radio Commission, do hereby certify that the attached documents are the originals or true copies of papers and evidence presented to the Commission on the application and in the hearing thereon before said Commission of the above-named appellant.

Witness my hand and the seal of the Federal Radio Commission, this 24th day of June, 1930.

[Seal Federal Radio Commission.]

JAMES W. BALDWIN,
Secretary Federal Radio Commission.

21 Form No. 6-A.

File No.: 1. P. B. 924. Call Letters: ——.

United States of America, Federal Radio Commission.

Application for Radio Broadcasting Station Construction Permit.

(Submit in Duplicate to District Supervisor of Radio in Charge of District in Which Station is Located. Swear to One Copy.)

To the Federal Radio Commission:

1. Name of applicant:* Shortwave & Television Laboratory, Inc.

2. Post office address: State, Massachusetts; City or town, Boston; Street and number, 70 Brookline Avenue.

3. Citizenship: United States.

4. State whether applicant is a corporation, partnership, or association. Corporation.

5. If applicant is a corporation, state: (*a*) Under laws of what State it is organized. Massachusetts. (*b*) May one-fifth, or more, of capital stock be voted by aliens or their representatives or by a foreign government or repre-

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***If a corporation, state corporate name; if a partnership, state names of all partners and the name under which the partnership does business; if an unincorporated association, state the name of an executive officer, the office held by him, and the name of the association. The same name or names should be signed in the place provided at the end of application, except that in the case of a partnership, the application may be signed in the name of the partnership by one of the partners.**

sentative therof? No. (*c*) Is any dirctor or officer an alien? If so, state his name and position. No. (*d*) If applicant is a subsidiary, state name and address of parent company. No.

6. Is the applicant a representative of an alien or foreign government? No.

7. Has the applicant, since February 23, 1927, been found guilty by any Federal Court of unlawfully monopolizing, or attempting unlawfully to monopolize, radio communication through control of manufacture or sale of radio apparatus, exclusive traffic arrangements, or by any other means, or by unfair methods of competition? No.

8. Who is to be owner of station? Shortwave & Television Laboratory, Inc.

9. Description of transmitting apparatus proposed to be constructed: Tube apparatus: Make, Own; Type, Own; Electron tubes: Number of, 1st & 2nd R. F. amplifier in addition to below; Crystal Oscillator: Number of tubes, 1; Plate current (per tube), 50; Plate voltage, 350 app. To insure transmission on the frequency authorized in addition to using a Piezo Electric Crystal oscillator, we intend to have an external crystal oscillator on the same wave length as the station. By putting a loud speaker on the output of this during moments when the wave is unmodulated, any variation in frequency will be heard as an audible note. Power amplifier, if used (last stage): Number of tubes, 1; Plate current (per tube), 350; Plate voltage, 2,000. Modulator: Number of tubes, 1; Plate current (per tube), 60; Plate voltage, 2,000; Maximum power output, 250 watts; Minimum power output for satisfactory operation, 100 watts; Percentage of modulation of transmitter is as near 100 as possible. Apparatus used to insure transmission on the frequency authorized or within the limits of variation allowed by the Commission is Beat frequency of station wave with an external crystal oscillator. Height of antenna (from ground or counterpoise to highest point of antenna), 35 app. meters; Antenna current, 2.5 app. amperes.

22 10. Proposed location of transmitter: State, Massachusetts; County, Suffolk; City or town, Boston; Street and number, 70 Brookline Avenue.

11. (*a*) The number of persons residing within one mile of proposed location of transmitter is 100,000; two miles, 250,000; three miles, 500,000. (*b*) The following radio transmitting stations (by call letters) are located within one mile of the proposed location of transmitter: WEY; Two miles, WBZA, WBF, WMP; Three miles, NAD; Eight miles, WNAC, WEEI, WLOE. (*c*) The following radio nonbroadcasting (commercial or Government) receiving stations (by call letters) are located within one mile of the proposed location of transmitter: Two miles, WBF; Three miles, NAD; Eight miles, ——.

12. Proposed location of main studio: State, Massachusetts; County of Suffolk; City or town, Boston; Street and number, 70 Brookline Avenue; Other studios, None.

13. The frequency, power, and hours of operation requested for the proposed station are as follows: (*a*) Frequency, 1,420 kilocycles; (*b*) Power, 250 watts day time, 100 watts at night; (*c*) Hours of operation (specify days of week and hours); Mon., Tue., Wed., Thurs., Fri., Sat., 12 noon to 5 p. m.; Mon., Tue., Wed., Thurs., 11 p. m. to 1 a. m.; Sat., 7:30 p. m. to 9 p. m.

14. Average amount of time expected to be devoted to following services: (*a*) Entertainment, 39½ hrs. (Full time); (*b*) Religious, None; (*c*) Commercial, None; (*d*) Educational, None; (*e*) Agricultural, None; (*f*) Fraternal, None; (*g*) Simultaneous entertainment broadcast with Television signals for purely experimental work.

15. Does applicant expect to obtain programs from what is known as a "Chain"? No. (*a*) Name of chain: ——. (*b*) What will be total hours per week of chain programs (*i. e.*, programs, both paid or sustaining, which are duplicated by any other station)? ——.

16. (*a*) Is applicant directly or indirectly interested in the ownership or control of any other radio station? Yes. (*b*) If so, state call letters and location of such station. W1WX and W1XAV, both at 70 Brookline Avenue. (*c*) Has the applicant in the past been directly or indirectly interested in the ownership or control of any other radio station? No. (*d*) If so, state call letters and location of such station. No.

23 Form No. 64.

Supplemental Application.

(To be attached to, and submitted with, applications for construction permits, licenses, modifications thereof, and renewals of licenses.)

1. Applicant represents that the transmitting apparatus described in the application to which this is attached was manufactured by Shortwave & Television Laboratory, Inc., and bears the manufacturer's type and serial number None.

2. If the transmitting apparatus is composite or assembled, applicant represents that the number — has been assigned to it by the applicant for purposes of identification and inspection, and that the following is a complete description of the apparatus: 1 112 crystal oscillator, 1 865 Buffer Amplifier, 1 UV 211 Modulated Amplifier, 1 UV 851 Power Amplifier.

Dated this Nineteenth day of September, 1929.

SHORTWAVE & TELEVISION
LABORATORY, INC.,
70 *Brookline Avenue, Boston, Mass.,*
Applicant.

(S.) HOLLIS S. BAIRD,
Chief Engineer.

NOTE.—If used in connection with an application for construction permit, only one transmitting apparatus is authorized to be constructed under the authority contained in a construction permit.

If application for license is being made and more than one transmitter is to be used under the license when granted, the information herein requested should be submitted on separate blanks for each transmitter, stating which transmitter each blank refers to.

Boston, Mass., Sept. 24, 1929.

Forwarded.

(S.) CHARLES C. KOLSTER,
U. S. Supervisor of Radio.

24 17. Will applicant sell time? No. (*a*) If applicant does not propose to sell time, how will station be supported? Our corporation will include such costs in overhead.

18. What will be the average number of hours the station will be operated during (*a*) each month in the summer? 158 hours; (*b*) each month in the winter? 158 hours.

19. Why will the operation of the station be in the public convenience, interest, or necessity? We already have construction permit for Station W1XAV for the transmission of television signals and it is our intention to give simultaneous broadcasting of voice and vision to increase interest in visual broadcasting.

20. What service will be rendered by the proposed station which is not now available to the community which it expects to serve? Simultaneous transmission of voice and vision which is not being done by any other station in this country at present.

21. Cost of proposed station: Transmitter, $5,000.00; Studio, $3.000.00; Other items (state nature), ——.

22. (*a*) State facts showing applicant's financial responsibility with respect to the construction and operation of a station such as that described in this application. Mr. Butler Perry, our Treasurer, a member of the firm of A. W. Perry, Inc. of Boston, who own $27,000,000 worth of property in Massachusetts, has guaranteed the financial support of this station. (*b*) If applicant is a corporation, state whether stock is to be sold after this permit is issued for purpose of raising money to construct and/or to operate the proposed station? No.

23. If the construction permit is granted, the construction of the station will be commenced within immediately days of the date on which applicant is notified thereof and will be completed and ready for operation within 45 days thereafter.

24. The applicant waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and re-

quests a construction permit in accordance with this application.

Dated this Eleventh day of September, 1929.

(S.) SHORTWAVE & TELEVISION
LABORATORY, INC.,
Applicant.

(S.) HOLLIS S. BAIRD,
Chief Engineer.

25 STATE OF MASSACHUSETTS,
County of Suffolk, ss:

Hollis S. Baird, being first duly sworn, upon his oath deposes and says that he is the (If applicant is not an individual, state relation of affiant to applicant) Clerk and Chief Engineer of above-named applicant, and that the facts stated in the foregoing application are true of his own knowledge, except as to such statements as are therein stated to be on information and belief, and as to such statements he believes them to be true.

HOLLIS S. BAIRD.

Subscribed and sworn to before me this 14th day of Sept., 1929.

BARTHOLOMEW McCARTHY,
Notary Public.

Radio Supervisor's Report.

Application received Boston, Mass., Sept. 16, 1929.

Remarks (state any pertinent facts): Submitted for new broadcast station. Applicant requests call signal W S W T.

(S.) CHARLES C. KOLSTER,
U. S. Supervisor of Radio.

CCK/p.
Enc.

26 Legal Division, Mar. 19, 1930. Reception Number 0973.

Law Offices Donovan and Bond, Washington, D. C.

1010 Shoreham Building.

William J. Donovan, Henry Herrick Bond, Rush H. Williamson, Frank G. Raichle, George S. Leisure, Horace

R. Lamb, Bethuel M. Webster, Jr., Clyde Y. Morris, Paul M. Segal, Ralstone R. Irvine, Breck P. McAllister, Richard A. Mahar.

Telephone: National 1876.

March 13, 1930.

Federal Radio Commission,
Washington, D. C.

Re Dockets Numbered 744, 745 and 752, Applications of Short Wave and Television Laboratory, Inc., for Construction Permits.

GENTLEMEN:

When the above cases were called for hearing March 12, 1930, the Commission extended permission to the applicant to make amendments to the applications involved and adjourned the hearing until a date to be fixed, about May 8, 1930.

Will you please consider this letter as an amendment to the application contained in Docket 745 by striking the request for the designation of the frequency of 1420 kilocycles and inserting in lieu thereof a request for the designation of 1370 kilocycles, the application in other respects to remain as at present.

It is our desire to file a more detailed and comprehensive form of application but pending the preparation of this form should like the amendment to be made as above indicated.

This application involves the sharing of time with Station WLEY, now operating upon the frequency referred to.

We request that the Commission make no change in the assignments to this frequency which might affect the application of the Short Wave and Television Laboratory, Inc., without affording that Company an opportunity to be heard. This request particularly refers to any proposal to transfer the station license of Station WLEY, or to remove the transmitter of that station to a new location.

When the revised application for 1370 kilocycles is filed we shall ask leave to withdraw the applications covered by

Dockets 744 and 752, requesting the designation of 1200 kilocycles and 1604 kilocycles.

Very truly yours,

B. M. WEBSTER, Jr.

27 Form No. 6a-1.

File No.: ——. Official No.: ——. Call Letters: ——.

United States of America, Federal Radio Commission.

Amended Application for Radio Broadcasting Station Construction Permit.

(Submit in duplicate to District Supervisor of Radio in charge of district in which station is located. Swear to one copy.)

(Docket 745; see letter of B. M. Webster, Jr., dated March 13, 1930.)

To the Federal Radio Commission:

1. Name of applicant:* Short Wave & Television Laboratory, Inc.

2. Post office address: State, Massachusetts; City, Boston; Street and number, 70 Brookline Avenue.

3. Citizenship: United States.

4. State whether applicant is a corporation, partnership, or association. Corporation.

5. If applicant is a corporation, state (*a*) Under laws of what State it is organized. Massachusetts. (*b*) May more than one-fifth of capital stock be voted by aliens or their representatives or by a foreign government or representative thereof? No. (*c*) Is any director or officer an alien? If so, state his name and position. None. (*d*) If applicant is a subsidiary, state name and address of parent company and under laws of what State or country

---

*If a corporation, state corporate name; if a partnership, state names of all partners and the name under which the partnership does business; if an unincorporated association, state the name of an executive officer, the office held by him, and the name of the association. The same name or names should be signed in the place provided at the end of application, except that in the case of a partnership, the application may be signed in the name of the partnership by one of the partners.

parent company is organized. Not a subsidiary. (*e*) Whether stock is to be sold after this permit is issued for the purpose of raising money to construct and/or operate the proposed station. No.

6. State fully the facts showing applicant's finan-
28 cial responsibility with respect to the construction
and operation of a station such as that described
in this application. Applicant has sufficient funds in cash.

7. Is the applicant a representative of an alien or foreign government? No.

8. Has the applicant, since February 23, 1927, been finally adjudged guilty by any Federal court of unlawfully monopolizing, or attempting unlawfully to monopolize, radio communication through control of manufacture or sale of radio apparatus, exclusive traffic arrangements, or any other means, or of unfair methods of competition? No.

9. State applicant's relation to station (whether applicant is to be owner or lessee, and, if not, nature of applicant's interest in use and control of station). Applicant to be owner.

10. If applicant is not to be owner of station, who is? ——.

11. Is this application made for (*a*) Authorization to construct new station? Yes. (*b*) Authorization to change present location of transmitter of existing station? No. If so, why is such change desired? ——. (*c*) Authorization to change maximum power, which necessitates installation of new equipment? No. (1) If so, applicant represents that present power is —— watts; (2) Authorization is requested to change maximum power of transmitter to —— watts; (*d*) Authorization to install new equipment? Yes. If so, state briefly what new equipment is to be installed (such as new transmitter, motor generator, etc.). New station. If frequency control apparatus such as crystal control is to be installed, a separate application for that purpose must be filed.

12. Description of transmitting apparatus pro-
29 posed to be installed: (*a*) Make, Own; (*b*) Type,
——; (*c*) Manufacturer's serial number, ——; (*d*)
Oscillator: Type of circuit, Crystal; Number of tubes, one; Plate current (per tube), 20 ma.; Plate voltage, 250;

(*e*) Number of intermediate power amplifier stages (if any), One between crystal and modulator amplifier; (*f*) Power amplifier, if used (last stage): Number of tubes, One; Normal operating: Plate current (per tube), 500 ma.; Plate voltage, 2,000; Manufacturer's rating of tubes: Plate current, 1,000 ma. max.; Plate voltage, 2,000; Power output, 1,000 watts; (*g*) Modulator: Number of tubes, 2; Plate current (per tube), 47 mils.; Plate voltage, 1,250 v.; Which radio stage is modulated? 2nd from crystal; (*h*) Maximum power output, 1,000 watts on modulation peaks with 250 watts carrier; Minimum power output for satisfactory operation, 100 watts; Normal radiated power, 48 meter amperes; Height of antenna (from its ground or counterpoise to highest point of antenna), 32 meters; Antenna current (at base), 2.5 amperes, (*i*) Plate power supply source for last stage, motor generator set at 100 watts; Ratings (voltage and current), 2,000 v. at .75 amp.; What is maximum percentage of modulation? 100%. Modulation measuring device is Estimation and calculation.

13. (*a*) Type of antenna: Inverted "L". (*b*) Height of vertical lead: 80 feet. (*c*) Length of flat top (if any): 95 feet. (*d*) Counterpoise, type and dimensions: Use ground. (*e*) Distance between towers or antenna supports, 180 feet. (*f*) Resistance of antenna system: App. 20 ohms.

14. (*a*) Applicant represents that the attached is an accurate schematic diagram of the fundamental radio and audio circuit of the transmitter proposed, including antenna and ground or counterpoise connections, antenna feed system and that it indicates type and power of tubes with manufacturer's name. (This should be a blueprint or ink drawing, approximately the size of this application, or a complete schematic diagram of any size applicant has on file may be submitted.) (*b*) Speech input equipment: Make, Own; Type, ——; Audio monitoring device, Speaker and grid milliameter speaker may be connected to audio output or antenna output at will.

15. (*a*) Within how many cycles of assigned fre-
30 quency will frequency of transmitter be maintained
continuously? 50. (*b*) State what apparatus is
included as an integral part of the transmitter that will

automatically hold frequency within the limits specified in answer to 15(a) (such as quartz crystal). Quartz crystal in thermal chamber. If crystal is used, state whether or not crystal has automatic temperature control. ——. If not, why not? ——.

16. (*a*) What type of frequency measurement or calibration apparatus will be used to tune the transmitter or check its tuning? General Radio Precision Wavemeter and crystal oscillator beating with station wave. (*b*) Within how many cycles will this apparatus measure the frequency? Lowest audible frequency. (*c*) What methods will be used to check the calibration of this precision instrument? Checked by manufacturer. (*d*) How often will this instrument be checked? 30 day intervals.

17. (*a*) Proposed location of transmitter: State, Massachusetts; County, Suffolk; City or town, Boston; Street and number, 70 Brookline Ave.; Latitude: Degrees, 42; minutes, 20; seconds, 40; Longitude: Degrees, 71; minutes, 5; seconds, 50. (*b*) Is authorization requested to make experimental tests, by means of portable stations, to determine the most suitable location at which to construct station? No.

18. Number of persons residing within various distances of proposed location of transmitter: (*a*) For stations of all powers, give number of persons residing within 1 mile: 100,000; 2 miles, 250,000; 3 miles, 500,000. (*b*) For all stations of power above 1 KW, give in addition to above, the number of persons residing within 5 miles. ——; 8 miles, ——.

19. (*a*) The following radio transmitting stations (by call letters) are located within 1 mile of the proposed location of transmitter: WEY; 2 miles, WBZA, WBF; 3 miles, NAD; 8 miles, WLOE, WNAC, WSX. (*b*) The following radio nonbroadcasting (commercial or
31 Government) receiving stations are located within 1 mile of the proposed location of transmitter: ——; 2 miles, WBF, WEY (Receiver is not at transmitter); 3 miles, NAD; 8 miles, WSX.

20. (*a*) Name and give location of any airports or flying fields within 10 miles of proposed location of transmitter. Boston Airport, Boston, Mass.; Dennison Airport, Atlantic, Mass. (b) Give distance from transmitter to each

of such airports or flying fields. Boston Airport, three miles; Dennison Airport, six miles. (*c*) Name and give distance from transmitter to any established airways within 10 miles of proposed location of transmitter. Boston to New York air line goes directly over proposed site of station. (*d*) Give maximum height (in feet) of towers or antenna above ground level. 105 feet. (*e*) Will towers be painted and marked with signal lights to conform with Department of Commerce, Bureau of Aeronautics, specifications? If necessary.

21. Proposed location of main studio: State, Massachusetts; County, Suffolk; City or town, Boston; Street and number, 70 Brookline Ave. Other studios: None.

22. The frequency, power, hours of operation, and call letters requested for the proposed station are as follows: (*a*) Frequency, 1,370 kilocycles; (*b*) Power, 100 watts night; 250 watts day. (*c*) Hours of operation
32 (specify days of week and hours in each day): 7 to
11 P. M. daily. (*d*) Call letters (to be assigned by Secretary of Commerce): WBFP.

23. Average per cent of time expected to be devoted weekly to following services: (*a*) Entertainment, 80%; (*b*) Religious, None; (*c*) Commercial, None; (*d*) Educational, 20%; (*e*) Agricultural, None; (*f*) Fraternal, None; (*g*) ——.

24. Does applicant expect to obtain programs from what is known as a "chain"? No. (*a*) Name of chain: ——. (*b*) What will be the total hours per week of chain programs (i.e., programs, both paid or sustaining, which are duplicated by any other station)? ——.

25. (*a*) Is applicant directly or indirectly interested in the ownership or control of any other radio stations? Yes. (*b*) If so, state call letters and location of such stations. W1XAV. (*c*) Has the applicant in the past been directly or indirectly interested in the ownership or control of any other radio stations? None other than indicated in (*b*). (*d*) If so, state call letters and location of such stations. ——.

33 Short Wave & Television Laboratory, Inc., Boston, Mass.

Application for Construction Permit.

1370 KC., 100 W. (250 W., LS).

Extended Answers to Questions 28 *and* 29.

28. State definite facts why the operation of the station will be in the public convenience, interest, or necessity.

Applicant is engaged in the regular, successful transmission of televisual programs from Station W1XAV which transmissions serve a consistently interested "seeing public." These transmissions require an auxiliary aural channel in order to make them of greatest public service. It is inconceivable as a scientific matter, that television transmission can continue without the necessary aural channels. No channels save those in the band 550-1500 kc. are available (under Regulations of the Commission) for the satisfactory transmission of the aural portion of applicant's service.

As a practical matter of public service, the aural transmission must be under the same technical management and systematic control as the television transmission. It is not within the power of existing broadcasting stations under the law to lease the control of their facilities to this applicant. Furthermore, if satisfactory arrangements could conceivably be made for the "purchase of time" on an existing broadcast station for the rendering of the service required, the particular Boston situation with reference to available time is such that such an arrangement, even were it technically and legally feasible, is impracticable.

It is not sought by this application to cancel the assignment of Station WLEY or to lessen the service now being rendered by that station, but merely to share time with it upon the basis indicated above. WLEY has not had occasion to use full time; the company operating that station already serves the public from WLEX. The granting of this application will not disturb the "fair and equitable allocation" of facilities under the Amendatory Act of 1928.

The aural programs will not be so linked to the visual ones that they will be any the less interesting, instructive, inspirational, etc., to those listeners who do not have television apparatus.

The proposed service will encourge the development of the televisual technique.

The applicant is technically and financially equipped to render service of the highest order.

29. See 28, *supra.*

34 26. Will applicant sell time? No. (*a*) If applicant does not propose to sell time, how will station be supported? Funds of operating corporation.

27. What will be the average number of hours per month the station will be operated during (*a*) Each month in the summer? 120 hours. (*b*) Each month in the winter? 120 hours.

28. State definite facts why the operation of the station will be in the public convenience, interest, or necessity. See attached sheet.

29. State definitely what service will be rendered by the proposed station which is not now available to the community which it expects to serve. See attached sheet.

30. Cost of proposed station: Transmitter, $5,000.00; Studio, $3,000.00; Other items (state nature), Towers, etc., now available.

31. If the construction permit is granted, the construction of the station will be commenced within immediately days after the date on which applicant is notified thereof and will be completed and ready for operation within 45 days thereafter.

32. The applicant waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests a construction permit in accordance with this application.

Dated this 20th day of March, 1930.

(S.) SHORTWAVE & TELEVISION LABORATORY CORPORATION,
Applicant.

(S.) HOLLIS S. BAIRD,
Clerk and Chief Engineer.

35 STATE OF MASSACHUSETTS,
County of Suffolk, ss:

I, Hollis S. Baird, being first duly sworn, upon his oath deposes and says that he is the (If applicant is not an individual, state relation of affiant to applicant) Clerk and Chief Engineer above-named applicant, and that the facts stated in the foregoing application are true of his own knowledge, except as to such statements as are therein stated to be on information and belief, and as to such statements he believes them to be true.

HOLLIS S. BAIRD.

Subscribed and sworn to before me this 20th day of March, 1930.

(S.) BARTHOLOMEW McCARTHY,
Notary Public.

Radio Supervisor's Report.

Application received Washington, D. C., Dept. of Commerce, March 24, 1930.

Remarks (state any pertinent facts): At the request of the applicant's representative, Mr. Segal, this application is accepted at this office and referred direct to the Federal Radio Commission. This application is to supersede application dated Sept. 11, 1929.

(S.) W. D. TERRELL,
Chief Radio Division.

36 Copy for General Counsel.

Thursday, May 8, 1930.

Hearing Before the Federal Radio Commission,

Washington, D. C.

Docket No. 745.

In re SHORTWAVE AND TELEVISION LABORATORY, INC., Boston, Massachusetts.

Hart, Dice & Carlson, Shorthand Reporters, 416 Fifth St. N. W., suite 301-307 Columbian Bldg., Washington, D. C.
Geo. L. Hart, Edwin Dice, Fred A. Carlson.
Telephones: National 0343, National 0344.

37

Contents.

Thursday, May 8, 1930.

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Butler French Perry	61	..	..	....
A. D. Ring	62	..	..	....
Paul A. De Mars	66	71	..	....
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Exhibits.

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38 Federal Radio Commission, Washington, D. C.

Docket No. 745.

In re Application of Shortwave and Television Laboratory, Incorporated, Boston, Massachusetts. Application for construction permit; from 7 to 11 p. m. daily; frequency requested, 1,370 kilocycles; power requested, 100 w., 250 w. LS. Others notified; WPOE, Patchogue, New York; WLEY, Lexington, Massachusetts; WBGF, Glens Falls, New York.

Hearing Room, Federal Radio Commission, Interior Department Building, Washington, D. C.

Thursday, May 8, 1930.

The above-entitled matter came on for hearing before the Commission at 11 o'clock a. m.

Present:

Commissioner: Eugene O. Sykes.

Assistant Counsel: R. H. Hyde, R. L. Walker.

Technical Adviser: A. D. Ring, Engineer.

Official Shorthand Reporters: Hart, Dice and Carlson.

39 On behalf of Applicant: B. M. Webster, Jr., and Paul M. Segal, Washington, D. C.

On behalf of Station WLEY: Paul A. DeMars, Belmont, Massachusetts.

Proceedings.

Commissioner Sykes: The next case is Docket 745, application of the Shortwave and Television Laboratory, Incorporated, of Boston, Massachusetts, for the erection of a 100 watt station on 1370 kilocycles; time of operation, from 7 to 11 p. m. daily.

Mr. Segal: I have a brief statement to make in opening.

Opening Statement of Paul M. Segal in Behalf of Applicant.

Mr. Segal: This is an application for a construction permit to erect a broadcasting station to use the frequency of 1370 kilocycles, with an evening power of 100 watts, and a day time power of 250 watts. While the application reads to use the hours between 7 and 11 p. m., the effect of the application is to apply for the vacant half-time assignment on 1370 kilocycles. There is now assigned to that frequency WLEY, at Lexington, Massachusetts, which is just adjacent to Boston, with a half-time assignment, and the other half of the time is vacant.

For the purpose of getting that into the record, if there is no objection, I would like to move the introduction of the present license of station WLEY, and of the kilocycle list of stations now in operation on 1370 kilocycles.

40 Commissioner Sykes: Both will be admitted.

Mr. Segal: The testimony which will be offered by the witnesses who are here will outline the corporate history and organization of the applicant company; its financial ability; its technical resources; and we will have the chief engineer to testify as to the nature of the technical equipment and resources of the company. We will outline the character of television service which has been rendered by this company.

The problem that is presented by the application is one which must come to the attention of the Commission, either at the present time or in the very near future. It is the problem of providing a sound track for television programs. Television programs, at least so far as this applicant is concerned, are now being produced in such a state that their reception is satisfactory. That is, the devices which we have invented and the devices which we are manufacturing are of such a character that it is possible for persons using television apparatus to receive a satisfactory visual program, but unfortunately that visual program, without the accompanying sound, is merely a novelty, and the reception of it is of such a character that interest is lost in it. There is no interest in seeing some persons or some group of persons, without knowing what they are saying, without that very necessary synchronization of voice and music.

Also, the production of films in this country is rapidly changing over to the sound film type, and it is necessary, in order to produce high class television programs,
41 to use sound film, and it is advantageous to make
use of the program material offered by films of that character, which can only be used by a television station that has an auditory channel.

It is not proposed by this applicant, however, to put on programs on the broadcast station which will be of interest only to the television audiences. While the two programs will go out simultaneously, the oral programs on the broadcast channel will be of such character as to interest the broadcast listener who does not have television apparatus, and will be of the same type and character that he is accustomed to receive from ordinary broadcasting stations, with the additional advantage that he will be stimulated into an interest in getting visual track of that program, of course, to the great benefit of the television industry, which is in need of considerable encouragement.

The Commission has made no provision for television sound tracks in any frequency range except the frequency range from 550 to 1500.

The testimony will show that this company has experimented with putting on simultaneous vocal programs through the use of time over an existing station in Boston, WEEI, but the testimony will show that there is insufficient time available. Of course, the Commission's regulations prevent us from leasing time over a station, or from acquiring control of an existing broadcasting station for a portion of the time. If we could do that, it would be unavailable there, and for technical and program reasons it is necessary that the sound production go out simultaneously and under the same control as the visual program.

42 With that very brief introductory statement of the nature of the application, I should like to call Mr. Morgan.

Testimony in Behalf of Applicant.

Whereupon **Avigdor M. Morgan** was called as a witness in behalf of the Applicant and, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Segal:

Q. What is your full name? A. Avigdor M. Morgan.

Q. Where do you reside, Mr. Morgan? A. Arlington, Massachusetts.

Q. What is your occupation? A. President of the Shortwave and Television Laboratory, Incorporated.

Q. That is a corporation, is it? A. Yes.

Q. A corporation of what state? A. A Massachusetts corporation.

Q. When was it incorporated? A. December 4, 1928.

Q. I hand you these two documents, marked Applicant's Exhibit No. 1. Will you state what they are? A. They are copies of——

43 Q. Let me ask you this question, if there is no objection from Mr. Walker. Those two documents are the articles of incorporation and the amendments of the articles of incorporation, in certified copy form. A. Yes.

Mr. Segal: I offer those in evidence.

Commissioner Sykes: They are admitted.

(The articles of incorporation with certain amendments thereto, of Shortwave and Television Laboratory, Incorported, were mark "Applicant's Exhibit No. 1.")

By Mr. Segal:

Q. Mr. Morgan, will you state who are the officers of your corporation? A. I am the president. Mr. Butler F. Perry is the treasurer; Mr. Hollis S. Baird is the clerk and chief engineer.

Q. Do these officers also constitute the Board of Directors of your company? A. Yes, sir.

Q. Are there any other stockholders in the company besides the persons you have mentioned? A. There is one, who has a very small amount of stock.

Q. How long has your corporation been engaged in business? A. Since December 4, 1928.

Q. From the very moment of its incorporation? A. Yes.

Q. What is the nature of your business activity? What has it been? A. The manufacture of shortwave apparatus.

44 Q. What kind of apparatus have you been manufacturing? A. Shortwave coils and shortwave receivers, and some regular broadcast portables, but we have discontinued the manufacture of those.

Q. Have you been engaged in broadcasting television signals? A. Yes, we have.

Q. Over how long a period? A. Since the date we obtained our license from the Federal Radio Commission. I have not that date.

Q. About how much has been expended by your company during that period? A. For television alone?

Q. For the development of your television programs, and their transmission, and things of that character. A. We have actually spent, up to the first of this month, $56,708.89 in the purchase of television equipment, television materials and equipment.

Q. That has all been done without any return on your television enterprise? A. Absolutely no return on our television enterprise.

Q. Do you have any arrangement by means of which further funds are available to your company for the extension of this work? A. Yes, we have.

Q. With whom is that arrangement? A. An arrangement was made with Mr. Butler Perry, our treasurer.

45 Q. And he is here, is he? A. Mr. Perry is here.

Q. What has been the nature of your television activities? Just describe them briefly. A. We have confined ourselves solely to the transmission of half-tone pictures. On February 6 we made our first television broadcast in conjunction with WEEI, in the transmission of what they call their Big Brother program, from 7 to 7.30 in the evening. We televized the program and WEEI broadcast it over their regular channel. We have since continued that daily.

Q. Do you have any indication of popular interest in your television programs and in your apparatus and transmission? A. Yes, we have.

Q. How has that manifested itself to your company? A. By as many as three or four hundred people visiting our studios every day between five and six o'clock, and 11 o'clock at night.

Q. Has your company developed a suitable and acceptable television receiving apparatus? A. We certainly have.

Q. These people see that demonstrated there? A. They see actual television demonstrated.

Q. Do your television transmissions have a seeing audience that you have been able to ascertain the existence of? A. Yes.

Q. How remote, or over how great an area, does
46 this audience extend? A. The farthest we have any
knowledge of is located in Cohasset, Massachusetts,
22 miles from our station.

Q. Signals have been received, have they not, but the De Forest Laboratories in New Jersey? A. Yes, sir. Our signals have been received in New Jersey very well.

Q. Has your company given any study to the possibility of developing further interest in television by the use of a sound track? A. Absolutely. We consider it——

Q. Just a moment. From the experience that you have had in interviewing and seeing these people coming to the studio, and from the results that you have received from your broadcasts jointly with WEEI, would you just briefly indicate what you consider to be the possibilities of development of interest in that connection? A. Would you mind asking that question again, please?

Mr. Segal: Read the question.

(The reporter read the pending question.)

The Witness: What do you mean?

By Mr. Segal:

Q. I just want to know what you consider the possibilities of developing interest by the simultaneous broadcast of voices and television. A. From expressions obtained from our visitors, it seems to be the general opinion that sound is essential to television broadcasts, and we have had many statements from people who are interested, who tell us that they would be much more interested in television if it were possible for them to get the sound
47 with it.

Q. In your studio, where the television is being received from your transmitter, do you have a sound track there, in your reception room? A. Yes.

Q. Of course, that is not a radio sound track, but a wire? A. Yes.

Q. What has been the result of that operation, and the interest in it? A. It has caused, I might say, or helped to cause, the optical illusion of perfecting the picture. In seeing the person talk, it has made it much more natural than just watching the person in front of the scanning device moving his head forward and backward, opening his mouth and showing his teeth, which was all that could be done.

Q. You do not broadcast any silhouettes, do you? A. Absolutely not.

Q. Is there program material available to you in the way of talking movies and things of that character, if you get this sound channel for your broadcasting? A. We believe there is.

Q. What has been the response, among those of your listeners or rather lookers, who see these programs, with reference to its being a novelty? A. The statement has been made continually that so long as there is no sound transmission with the televisual picture, it can only remain a novelty, because the type of transmission is so limited, and the manner of transmission is so limited.
48 We have had one experience, where a man built his
own receiver and watched us for a while, and then

gave it up, simply because there was a lack of entertainment in the transmission of those pictures.

Q. What is there available in the way of evening hours over existing broadcast stations in Boston, for the transmission of a sound track? A. None on the chain stations, on the better stations, which are connected with the chain programs.

Q. Their evening hours, then, are given over to the chain, are they not? A. Practically entirely.

Mr. Segal: Mark these three pictures, please.

(The reporter marked several photographs.)

By Mr. Segal:

Q. I hand you this photograph marked Applicant's exhibit 2, and ask you to state what that is a picture of. A. That is a photograph of our general offices.

(The photograph of the general offices of Applicant was marked "Applicant's Exhibit No. 2.")

By Mr. Segal:

Q. What is exhibit 3? A. This is a photograph of our reception room in conjunction with our station.

(The photograph of applicant's reception room was marked "Applicant's Exhibit No. 3.")

49 By Mr. Segal:

Q. And what is exhibit 4? A. A photograph of the building in which our plant is located. Our plant has the upper half.

Q. You have the entire upper half of that building? A. Yes.

(A photograph of the building in which applicant is located was marked "Applicant's Exhibit No. 4.")

By Mr. Segal:

Q. What is the floor space you have available there? A. 20,000 square feet.

Q. Have you developed a satisfactory televisual receiving apparatus? A. Yes, sir.

Q. What is the situation of that with reference to production? A. We have continually delayed production on this receiver because we have felt that we could not sell the receiver until we were in a position to give the public something to see and listen to.

Q. Is this receiver adapted to the reception of televisual broadcasting from your station only, or from all types? A. From the two adopted standards of the Radio Manufacturers Association.

Q. Will this be a very expensive set in production? What do you estimate will be its retail cost? A. We estimate that the retail cost of the first receivers we put
50 out will be $400 complete.

Q. In connection with the broadcasting that you propose to do on 1,370 kilocycles, do you intend to have any sponsored, commercial, or advertising broadcasts? A. We have no intention of doing so.

Q. Do you intend to use phonograph records of any character? A. They would be of no use to us, in combination with television.

Q. What will be the nature of your programs? A. The greatest majority of our programs will be the transmission of one or two or three people, or perhaps four people, broadcasting music, or any type of program which will go over the air simultaneously with the picture.

Q. Will they be so arranged that they will be of interest to the ordinary broadcast listener who does not have the televisual apparatus? A. They certainly will.

Q. You do not intend, then, to use programs which will be interesting only to the people who have both types of receivers? A. No.

Mr. Segal: You may cross-examine.

Cross-examination.

By Mr. Walker:

Q. Do you have a television receiving set now on the market? A. We have offered none to the public. We have built some, which we have for our own experimental
51 work. We have never gone into production on them yet.

Q. In your opinion, how long will it be before the set which you put on the market will become practically obsolete because of developments in receiving sets? A. We have always claimed that the receiver will not suffer from obsolescence for a period of at least five years.

Q. That is your opinion? A. That is our firm belief.

Mr. Segal: I may say, Mr. Walker, that Mr. Baird, who is the engineer, will be able to testify as to the reasons for that, if you want to question him on it.

By Mr. Walker:

Q. One further question. Is it your purpose, in using this broadcast channel for which this application is made, to announce that the listener may also receive the visual pictures? A. Yes, sir.

Q. By purchasing a visual receiver; that you are broadcasting pictures to accompany that audible program? A. We probably would infer as much. We would not make the statement too bald. We certainly would infer as much, though.

Mr. Walker: That is all.

Mr. Segal: That is all.

Mr. DeMars: May I ask a question?

Mr. Segal: May I say this? I have no objection to Mr. Morgan being questioned, but, as I understand this appli-
cation, it is to share time with his station, which has
52 only a half-time license. I just wanted the record to
show that they might not legally oppose our applica-
tion, but I have no objection to any questions.

Commissioner Sykes: Proceed with the examination.

By Mr. DeMars:

Q. Where is your station located? A. 70 Brookline Avenue.

Q. Is that a thickly populated area? A. I cannot give you the exact figures, but that was all included in our application. All that information is given in our application.

Q. I am asking you. A. I cannot tell you exactly. It is fairly thickly populated, yes.

Q. It is an area composed mostly of apartment houses and dwellings occupied by more than one family, is it not? A. No, not on Brookline Avenue.

Q. You would not consider that a thickly populated area? A. No; Brookline Avenue is primarily a business street.

Q. In the general vicinity, say, for a mile? A. In the general vicinity of a mile, yes.

Q. It is as thickly populated an area as any district in Boston, is it not, with families? A. I do not think so.

Q. Will the new transmitter which is to broadcast this sound rack be located at the same location? A. The same location, yes, sir.

53 Mr. DeMars: That is all.

Redirect examination.

By Mr. Segal:

Q. Just a question or two to further develop that. Brookline Avenue is what might be called an automobile row, is it not? A. Automobile accessories are sold on that street, mostly.

Q. This place is right next door to the baseball park, is it not? A. The baseball park.

Q. What is the name of that park? A. Fenway Park.

Q. That is directly adjacent to your place of business? A. Directly adjacent, yes.

Mr. Segal: That is all.

(Witness excused.)

Commissioner Sykes: Call your next witness.

Whereupon **Hollis S. Baird** was called as a witness in behalf of the Applicant and, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Segal:

Q. What is your business? A. I am chief engineer of the Shortwave and Television Laboratory.

54 Q. What has been the nature of your education with reference to electricity and radio? A. I went through the Massachusetts Institute of Technology.

Q. When were you graduated from that institution? A. 1925.

Q. With what degree? A. B. S.

Q. Bachelor of Science? A. Yes.

Q. What has been the nature of your employment since that time, Mr. Baird? A. It has all been radio engineering.

Q. With what concerns have you been employed? A. The Wireless Specialty Apparatus Company, and the Dewey Radio Manufacturing Company.

Q. How long have you been with the Shortwave and Television Laboratory? A. Since it was incorporated.

Q. What has been the nature of your activities there? A. Research and development work on television and shortwaves.

Q. What apparatus have you been engaged in developing? A. Commercial television receivers.

Q. Have you been engaged in the transmission of television? A. Yes, since January, when we got our license.

Mr. Segal: Would you mark this group of exhibits, please?

(A group of photographs were marked, respectively, "Applicant's Exhibits, Nos. 5 to 13, both inclusive.")

By Mr. Segal:

Q. Mr. Baird, will you indicate, please, in a summary sort of way, what apparatus or equipment you have available for your activities at the plant? A. Do you want me to show the photographs too?

Q. No. First tell me in general what apparatus and equipment you have. A. We have a 500 watt television transmitter of modern design. We have all the measuring and laboratory equipment necessary for research work. That covers it, in a general way.

Q. Do you have also factory manufacturing equipment? A. Yes, sir. We have all the factory equipment necessary.

Q. I show you applicant's exhibit No. 5, and ask you to state what that is. A. That is one of the early models of our television chassis, practically like our present one.

Q. What are the features of that television chassis that distinguish it from the types manufactured by other concerns? A. It is a universal receiver and will receive both R. M. A. standards.

Q. By both R. M. A. standards, what do you mean? A. A 48-line picture and a 60-line picture.

Q. A person using a device of that character changes from one transmission to the other by what method?

56 A. Just by moving this belt, and also by changing the speed of the gears, by a gear shift lever.

Q. There is a gear shift lever on it? A. Yes, sir.

Q. Will you please briefly indicate what you have there in the nature of horizontal scanning, and how that differs from others? A. All methods of scanning heretofore have been with curved lines. They gave very bad distortion, because the curved lines were inverted back again. We scan in a straight line, which is the natural way to scan a picture, both in the transmitter and receiver.

Q. Does the scanning at the transmitter, in a straight line, as you do it, make it impossible for it to be received on any other type of receiver? A. The only other competitive receiver scans in a straight line, but they do not transmit in straight lines.

Q. But the signals can be received on any type? A. Yes. As a matter of fact, they can be received on a disc receiver. Of course, you get a little distortion.

Q. Your device is not such that the reception of your transmission is limited to those people who buy your apparatus? A. No.

Q. Is there any other television apparatus on the market that permits of the ready change-over between the two types of transmission? A. The only competitive apparatus we know of is capable of receiving our trans-

57 mission. There is only one standard—48 and 60.

Q. Yours is able to use both? A. Both 48 and 60.

Q. I show you applicant's exhibit 13. A. That is our earlier transmitting equipment, or scanning equipment, and this (indicating) is our later one.

Q. Exhibit 12 is the later one? A. That is what we are using now, with the horizontal scanning. This (indicating) is with the disc.

Q. Exhibit 11 is what? A. That is our receiver, with the young lady in front of it. That is our receiver for the home.

Q. That is the type of receiver on which your company intends to go into production? A. Yes.

Q. I show you exhibit 9. A. That is our A. C. Shortwave Receiver.

Q. Your company is now engaged in the commercial manufacture of that? A. Yes. It is the only A. C. Shortwave Receiver on the market that we know of. That is the external view.

Q. Exhibit 8 is the external view of that same receiver. Exhibit 7 is what? A. That is our television transmitter and the speech panel for speech programs over WEEI.

Q. The apparatus which appears in the foreground has since been removed and put in a panel? A. Yes.

58 Q. Exhibit 6 is your power supply, is it not? A. Yes.

Q. What technical personnel have you at your plant? A. I have three technical assistants.

Q. Are they all trained technicians? A. Yes, sir.

Q. What is the nature of your present plant, in the way of technical developments? A. We are working at the present time on a larger picture, which we will show very soon.

Q. How large a picture will you soon be able to show? A. About 6 by 8.

Q. What is the present size? A. The present size is 3 inches square.

Q. Is that shown through a magnifying glass, however? A. Yes. The new one will be on a screen.

Q. A 6 inch screen? A. Yes; 6 by 8.

Q. On what band of frequencies are you able to transmit these? A. 2100 to 2200 kilocycle band.

Q. How wide a band do you require? A. At the present time we use about a 30 kilocycle band.

Q. Are you suppressing one of the side bands? A. No, but our highest frequency is just over 15,000 kilocycles. Of course, with the 60-line picture, there would be a wider side view.

59 Q. Does your company have, or do you, yourself, have any patent standing with reference to your apparatus? A. We have six applications in, some of which have been heard from very favorably. We have three more we are applying for.

Q. Those are all on developments you have supervised? A. Yes.

Q. Have you had indications of a seeing audience, so to speak, for your transmission? A. Yes. We have a small number of people looking, concededly. We would have more people looking in if we had apparatus available for sale.

Q. What manifestations do you have at the plant itself of public interest? A. Every evening we have a large number of visitors.

Q. About how many do you average? A. I would say up as high as 200 or 300, and sometimes more. It depends on the feature we are broadcasting.

Q. From a technical standpoint, Mr. Baird, what is the possibility of developing television broadcasting, when you have a sound track available for it? A. The biggest development is only in that direction. Without the sound track, it is really just like looking at a still picture. With a sound track, you actually have talking movies, on a smaller scale. Instead of talking movies, with television you have the voices. At the present time, we need very badly a sound channel.

Q. How much of a sound channel do you now have available? A. We broadcast over WEEI from 6 to 6:30 every night, and Sunday afternoon.

60 Q. You do not have any late evening hours? A. No. They are on the NBC starting at 8 o'clock.

Mr. Segal: You may cross examine.

Mr. Walker: I have no questions.

Commissioner Sykes: Have you any questions, Mr. DeMars?

Mr. DeMars: No, sir.

Mr. Segal: In view of the fact that they have no questions, I think I will take the burden of going forward on the question of blanketing.

By Mr. Segal:

Q. From your experience as an engineer, Mr. Baird, do you believe that there would be any blanketing of nearby receiving sets if your station were to operate with 100 watts in the evening, at its present location, on 1370 kilocycles? A. I do not think so. I have gone into that question very thoroughly myself. That is very important in getting a station put up. There is hardly a receiver within a quarter of a mile of us. Beyond that we start to get into the populated area. We have had a few complaints on our television signals. They have been investigated, and they are all crystal sets or old type Crosley sets. We have only one or two complaints on modern receivers, and they were receivers that were not working very well.

Q. That has been with the use of a very wide side band, compared to broadcasting? A. Yes.

Q. Those complaints have all been adjusted satisfactorily? A. Yes. We can give you the names of
61 the people.

Mr. Segal: That is all.

(Witness excused.)

Mr. Segal: Mr. Perry.

Whereupon **Butler French Perry** was called as a witness in behalf of the Applicant and, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Segal:

Q. Give your name to the reporter. A. Butler French Perry.

Q. What is your business, Mr. Perry? A. Real Estate.

Q. With what company? A. A. W. Perry, Incorporated.

Q. Do you have any connection with the Shortwave and Television Laboratory? A. I am treasurer.

Q. Have you been supplying the money for the operations of this company? A. I have.

Q. To what extent, during the time that it has been engaged in television, have you contributed to that? A. About $80,000.

Q. Just approximately, Mr. Perry, what would you state to be the value of your personal assets? A. My personal assets?

62 Q. Yes. A. I should say $1,500,000.

Q. Mr. Perry, you have undertaken, have you not, to finance the operation of this broadcasting station, for which this company is applying? A. I have.

Q. And you will see that necessary funds for program and technical services will be available? A. Yes, sir.

Mr. Segal: That is all.
Commissioner Sykes: Are there any questions?
Mr. Walker: No questions.

(Witness excused.)

Mr. Segal: If there is no objection I should also like to offer in evidence the last report made to the Commission by the Shortwave and Television Laboratory, Incorporated, as to their progress in television.

Commissioner Sykes: Have you such a report?

Mr. Segal: There is one on file. I just want to refer to it in the record.

Commissioner Sykes: All right. If such a report is on file it will be made a part of the record.

Mr. Segal: May I ask Mr. Ring a question or two?

Whereupon **A. D. Ring** was called as a witness in behalf of the Applicant and, having been first duly sworn, testified as follows:

63 Direct examination.

By Mr. Segal:

Q. Mr. Ring, you are a member of the engineering staff of the Federal Radio Commission? A. Yes, sir.

Q. In the course of your duties you have made a mathematical analysis, by zones and states, of the broadcasting facilities assigned, have you not? A. The Engineering Division has made such an analysis, yes.

Q. You are familiar with that analysis? A. Yes, sir.

Q. Mathematically it is correct, is it not, Mr. Ring, so far as you know? A. With reasonable accuracy, yes.

Q. Under that analysis, and dealing, now, with the use of frequencies, what is the number of frequencies to which the State of Massachusetts is entitled, in the local classification? A. I do not have a list of frequencies.

Q. I mean the number of frequencies. A. I have the number of assignments.

Q. Yes. A. The State of Massachusetts, if physical conditions permitted, might use all six local frequencies.

Q. What is the quota, if I may use that word, as to the local assignments? A. Massachusetts is due, on local assignments, 4.68.

Q. And how many such assignments does it now have? A. Massachusetts is now assigned, 3.00. 64

Mr. Segal: I believe that is all.

Commissioner Sykes: Are there any questions?

Mr. Walker: No questions.

By Commissioner Sykes:

Q. For the benefit of the record, Mr. Ring, please state what Massachusetts is entitled to and has, on the other two classes of stations, cleared channels and regional channels. A. On cleared channels Massachusetts is due 1.25; there are now assigned, 1.00. On regional channels Massachusetts is due 4.05. There are assigned 5.00.

Q. Have you a list of the licensed stations in the City of Boston? A. Yes, sir.

Q. Would you read into the record the call letters, power, and assignments of the stations in Boston and vicinity? A. WBBS, 50 watts, 1500 kilocycles, dividing time with WLOE; Station WBZA, 500 watts, 990 kilocycles; Station WEEI, 1 kilowatt, 590 kilocycles; Station WHDH, 1 kilowatt, 830 kilocycles, day. It is here charged to Boston as to the studio, and Gloucester as to the transmitter. Station WLOE, 100 watts, night, 250 watts, day, 1500 kilocycles, dividing time with WBBS. Station WNAC, 1 kilowatt, 1230 kilocycles; Station, WSSH, 500 watts, 1410 kilocycles, dividing time with WLEX and WMAF. Those are all the stations charged to Boston.

Commissioner Sykes: Are there any further questions?

65 By Mr. Segal:

Q. The only local assignments in Boston and civinity are a full time assignment to 1500, and a half-time assignment to 1370. Is that the substance of the local assignments you have read there? A. I do not have the half-time on 1370 as charged to Boston.

Q. That is WLEY? A. That is charged to Lexington, some distance from Boston.

Commissioner Sykes: How far is Lexington from Boston?

Mr. Morgan: It is ten or twelve miles from the heart of Boston.

Commissioner Sykes: Do you want to ask Mr. Ring any questions?

Mr. De Mars: No, sir.

Mr. Segal: You say Lexington is ten miles from the heart of Boston?

Mr. Morgan: At least ten miles from our station. We are practically in the heart of Boston.

By Mr. Segal:

Q. Just one other question. A station operating on 1370 kilocycles, with 100 watts at night, is what you would call a local assignment, is it not? A. Yes.

Mr. Segal: That is all.

(Witness excused.)

Commissioner Sykes: Is there anything further?

66 Mr. Walker: I would like to have the record include a copy of the last official kilocycle list of stations.

Mr. Segal: No objection.

Commissioner Sykes: Is there any testimony in behalf of Station WLEY?

Mr. DeMars: I have some testimony.

Commissioner Sykes: Let your witnesses be sworn.

Mr. DeMars: I have no witnesses.

Commissioner Sykes: Are you going to testify? Are you a lawyer?

Mr. DeMars: I am representing WLEY.

Commissioner Sykes: You want to testify?

Mr. DeMars: I want to make some statements.

Commissioner Sykes: All right.

Testimony in Behalf of Station WLEY.

Whereupon **Paul A. De Mars** was called as a witness in behalf of WLEY and, having first been duly sworn, testified as follows:

Direct examination:

The Witness: It has been stated that WLEY is only a half-time station, but I think that it is necessary to go back into the past a little in order to get a clear picture of what had happened.

Previous to approximately April of this year, WLEY was a full time station, operating 100 watts day-time and 250 watts, night, on a frequency of 1420 kilocycles. WLEX, owned and operated by Carl S. Wheeler, doing business as the Lexington Air Stations, was also
67 operating station WLEX, a regional channel, operating on a frequency of 1360 kilocycles.

At that time there were no restrictions on WLEY as regards times. WLEX shared time.

On or about April, a change was made in the frequency allocation of the various stations. WLEY was changed to 1370, and WLEX to 1410 kilocycles. Through a double error station WLEY was not given 250 watts day-time in the new assignment. It was simply rated as a 100 watt station. The Engineering Department admitted the mistake and promised to rectify it.

Mr. Segal: I object to anything except the terms of the license itself.

Commissioner Sykes: We will reserve ruling on that.

The Witness: Also, on the new frequency assignment, the local channel WLEY, and the regional channel WLEX, were separated by only 40 kilocycles. Previously it had been possible to satisfactorily operate both stations. Under the new assignment it was not satisfactory, even though the two transmitters were operating under the best possible conditions as regards interference; that is, they were both located at the same geographical point. That matter is being taken up in an attempt to straighten it out.

For some unknown reason, apparently, by another oversight, WLEY was rated as a half-time station, but did not divide time with any particular station. It was simply rated as half-time. I object to the applicants considering that a half-time station be considered as having available the least desirable time, and that the new applicant
68 can take the most favorable time, even though the station is only considered half-time.

Under the most favorable conditions it is not satisfactory to operate WLEX and WLEY. There will be further difficulties. Located under the most favorable conditions, it will interfere with the operation of the regional channel WLEX to have a station located in the center of the thickly populated Boston area, operating on a frequency only 40 kilocycles away.

Mr. Segal: I object to that as a conclusion.
Commissioner Sykes: Ruling is reserved.

The Witness: There is another station in Boston, WSSH, owned and operated by the Tremont Temple Baptist Church of Boston, which shares time on 1410 kilocycles with WLEX and WMAF, which is located at South Dartmouth, Massachusetts. I have been authorized by the Tremont Temple Baptist Church to introduce as evidence an affidavit setting forth their objections to the granting of a station operating on 1370 kilocycles, operating at the same time at which they now operate. I would like to introduce that affidavit.

Mr. Segal: I object to it on the ground that it is not from any person who has any legitimate interest in the operation on 1370, but from an entirely different local channel, and there is no competition of any kind between the two.
Commissioner Sykes: That objection will be overruled. Let the affidavit be marked.

69 (The affidavit of Stanley M. Lane, dated May 5, 1930, was marked "WLEY Exhibit No. 1.")

The Witness: I would like also to introduce as evidence this exhibit, which shows the existing hours of operation of the interested stations, WLEX, WLEY, and WSSH, occupying the two frequencies, 1410 and 1370, with only 40 kilocycles separation.
Commissioner Sykes: That shows the present hours of operation?
The Witness: That shows the present hours of operation of the three stations.
Commissioner Sykes: Let it be marked. You identify that as being correct?
The Witness: Yes.

(A chart showing hours of operation of WLEX, WLEY and WSSH, was marked "WLEY Exhibit No. 2.")

The Witness: I want it to be noted that only during one hour of the hours of operation of these three stations, does WLEY, on 1370, operate at the same time as the Tremont Temple Baptist Church on 1410, because of the interference which is obtained to the listeners.

WSSH is located in downtown Boston, where, in general conditions are not far different from the conditions of a transmitter located on Brookline Avenue, although there is some miles distance between them, I believe.

When the hours of operation are common, WLEY is broadcasting church services, which are felt to be of
70 great benefit to the people locally, and for that reason they still continue.

I am not sure that this is admissible, but I have a copy of a letter sent to the Federal Radio Commission, Washington, D. C., attention of Mr. Sutton, pointing out the difficulties that have been encountered.

By Commissioner Sykes:

Q. Who is the letter from? A. It is from myself, as Chief Engineer.

Commissioner: Sykes: It is not admissible. You can testify to the facts.

The Witness: The letter is on file with the Commission.

Commissioner Sykes: You are now testifying yourself. If you want to testify of your own knowledge to the contents of that letter, that is, the facts contained in the letter, testify to them, regardless of the letter.

The Witness: Yes.

Commissioner Sykes: Why refer to a letter when you are testifying?

The Witness: The point I wanted to bring out is that we took the matter up in regard to the matter of a 40 kilocycle separation, as soon as that ruling had gone into effect, because it was not satisfactory or desirable to the various stations concerned, and in the meantime, due to Mr. Sutton's resignation, the matter simply had to be initiated all over again, and for that reason the matter has not come up for action, but we have not been neglectful in stating our case. That is the point I wish to make.

I think that is all the testimony I care to produce.

71 Cross-examination.

By Mr. Segal:

Q. WLEY is now licensed for one-half time operation on 100 watts, is it not, on 1370 kilocycles? A. That is right.

Q. There is no application pending from your station for a change of frequency? A. No application.

Q. There is no application pending for full time? A. No.

Q. The only application you have pending is for an increase in power, is that right? A. That is right.

Q. WLEY and WLEX are situated adjacent to each other? A. Within a few hundred feet.

Q. They are both owned by the same person? A. Yes.

Q. Neither one of them is used to the full limit of time authorized by the license? A. That is right, for the reasons I have stated. They were, but they are not now.

Q. The last license WLEY had was for 1420 kilocycles, is that correct. A. That is right.

Q. And that was for half-time? A. I do not so understand, but I was not connected with the station at the time they were on 1420.

Mr. Segal: I move the admission of a copy of the last license for 1420 kilocycles.

72 Commissioner Sykes: That will be admitted.

By Mr. Segal:

Q. It has always been licensed for half-time, has it not? A. I do not so understand.

Q. You don't know?

Commissioner Sykes: Of course, the license speaks for itself.

By Mr. Segal:

Q. The station broadcasts phonograph records almost exclusively, does it not? A. Practically.

Q. It does not use any evening hours? A. From 10 to 12.

Q. Not every day? A. Every day.

Q. Did you use the hours from 10 to 12 on May 4, 1930? A. I don't know.

Q. Can you state whether or not this newspaper announcement of your program (exhibiting paper to the witness) is correct for that date? A. Having nothing directly to do with the programs, I do not know, but this is the usual hour at which services are broadcast from the Church named here, and I believe it is correct.

Q. Do you know whether you used any evening hours on the date referred to in that announcement? A. No. I do not think they use any Sunday hours.

Q. How about Tuesday, April 22nd? Do you
73 know whether your station used any evening hours
on that day? A. I could not say, because the hours
from 10 to 12 have been initiated fairly recently.

Q. How recently? A. Within a month.

Q. After the Shortwave and Television Laboratory had made its application? A. Yes.

Q. At the time we made application, you were using no evening hours? A. This is a continuation of your application dating way back. That is right.

Q. Or even since our specific application to share with you on 1370? A. That is right.

Q. You solicited that affidavit from the Chairman of the Board of Trustees of WSSH, didn't you? A. No, sir.

Q. Did you prepare it? A. No, sir.

Q. Did you have any conferences with them with reference to getting the affidavit? A. They requested that since they knew that there would be a representative here, that the representative introduce their affidavit.

Q. Have they filed any application, or filed any opposition to a station operating on 1370 kilocycles? A. No, sir.

Q. They are perfectly satisfied for that station to
74 operate on 1,370, so far as you know? A. Yes. I
point out, however, that we do not operate during
the hours they operate, except with that one exception.

Q. When do they operate? A. They operate, I think it is, from 7:30 to 9 p. m. on Fridays. I am not sure what hours Sunday morning; and again Sunday night, I think the same hours.

Q. The only evening hours they use are Friday and Sunday? A. The only evening hours are Friday and Sunday.

Q. So that they would not object to the operation of this proposed station at least 5 nights a week, would they? A. I cannot answer that.

Q. So far as you know, and from what you have learned in your conference with them—— A. So far as I know, they would have no objection.

Q. Were you affiliated with the Wheeler enterprise when WLEX and WLEY were 60 kilocycles apart, under the old assignment? A. No, sir.

Q. As a matter of fact, even then WLEY used only morning hours, did it not? A. I have been told that they operated them simultaneously.

Q. But they used WLEY only in the morning, is that not correct? A. I cannot answer that. That is going back beyond my time.

75 Mr. Segal: That is all the cross examination I have.

Commissioner Sykes: Any questions?

Mr. Walker: No questions.

(Witness excused.)

Commissioner Sykes: Is there any further testimony?

Mr. Segal: I may have some rebuttal (after conferring with witnesses). I will recall Mr. Baird.

Whereupon **Hollis S. Baird**, heretofore called as a witness in behalf of the Applicant, was recalled in rebuttal and testified further as follows:

Direct examination.

By Mr. Segal:

Q. You are the same Hollis S. Baird who has been sworn here before? A. Yes.

Q. You were in Boston, and affiliated with the Shortwave and Television Laboratory at the time WLEY was on 1420 kilocycles? A. Yes, sir.

Q. And at that time participated in the filing of an application for sharing time with them on that frequency? A. Yes, sir.

Q. Are you able to state from your recollection and knowledge what time WLEY was on the air when they had 1420 kilocycles? A. What we could go by was the newspaper program, and also listening in. I believe they are on until 1 o'clock daily. 76

Q. 1 a. m. or 1 p. m.? A. 1 p. m.

Mr. Segal: I believe that is all.

(Witness excused.)

Commissioner Sykes: Is there anything further?
Mr. Segal: We rest.
Commissioner Sykes: That concludes the testimony in this hearing.

(Whereupon, at 12 o'clock, noon, the hearing in the above entitled matter was concluded.)

Docket No. 745.

APPLICANT EXHIBIT 1.

Hart, Dice & Carlson, Official Reporters.

May 8, 1930.

Introduced at Hearing Before Federal Radio Commission.

77 The Commonwealth of Massachusetts, Department of Corporation and Taxation, 237 State House, Boston.

Henry F. Long, Commissioner.

Articles of Amendment.

For filing and recording a certificate providing for a change of shares with par value to shares without par value, whether or not the capital is changed thereby, one cent for each share without par value resulting from such change, less an amount equal to one twentieth of one per cent of the total par value of the shares so changed; but not in any case less than twenty-five dollars. The fee for all other amendments is ten dollars. Make checks payable to The Commonwealth of Massachusetts. This certificate must be submitted to the Commissioner of Corporations and Taxation within thirty days after the date of the vote of the stockholders. (Section 43, Chapter 156, General Laws.)

We Avigdor M. Morgan, President; Butler F. Perry, Treasurer, and Hollis S. Baird, being a majority of the Directors of Short Wave and Television Laboratory, Inc., located at 104 Brookline Avenue, Boston, in the County of Suffolk and Commonwealth of Massachusetts, in compliance with the provisions of Chapter 156 of the General Laws as amended, do hereby certify that at a meeting of the stockholders of the corporation, duly called for the purpose, held May 31st, 1929, and by the affirmative vote of Five Hundred and two shares of the common stock of the corporation, being all the stock outstanding and entitled to vote, the following amendment or alteration in the agreement of association and articles of organization of the corporation was duly adopted, namely:

Voted: To amend the agreement of association and articles of organization of this corporation by changing the issue of capital stock as shown in said articles of organization, and the consideration therefor, so that as amended the issue of the one thousand (1000) shares of non-par stock shall be as follows: Services (already rendered), as per agreement with Avigdor M. Morgan, seventy-five (75) shares; with Hollis S. Baird, seventy-four (74) shares; with Jack Levy, seventy-four (74) shares, and with Edward P. Barry, seventy-five (75) shares, (all of said service stock to be immediately issued,) and for cash, seven hundred and two (702) shares, so that as amended said articles of organization dealing with the issue of stock will show as follows: Total authorized, one thousand (1000) shares—total issued for cash, seven hundred and two (702) shares—for services, two hundred and ninety-eight (298) shares.

And it is further voted to amend the articles of organization, agreement of association and by-laws of the corporation by striking out therefrom all restrictions upon the sale or transfer of shares of capital stock in this corporation.

78 In witness whereof and under the penalties of perjury, we have hereto signed our names this thirty-first day of May, in the year 1929.

AVIGDOR M. MORGAN.
BUTLER F. PERRY.
HOLLIS S. BAIRD.

79 [Endorsed:] AWM. Department of Corporations and Taxation, Jun. 28, 1929, with fee of $10. Department of G. L. Jun. 20, 1929. Corporations and Taxation. Received Jun. 28, 1929. Corporation Division, Secretary's Office. Appl. Ex. 1. Write nothing below. Short Wave and Television Laboratory, Inc. Fee $10.00 pd. Articles of Amendment, General Laws, Chap. 156, Sec. 42. Amendment to Articles of Organization relative to Issue of Stock provided for therein; Removal of Restrictions Upon Sale and Transfer of Stock. Filed in the office of the Secretary of the Commonwealth, June 28, 1929. I hereby approve the within certificate, this 28th day of June A. D. 1929. Henry F. Long, Commissioner of Corporations and Taxation.

CAS:HGD.

The Commonwealth of Massachusetts, Office of the Secretary.

Boston, March 14, 1930.

A true copy.
Witness the Great Seal of the Commonwealth.
[SEAL.] F. W. COOK,
Secretary of the Commonwealth.

80 (Copy.)

The Commonwealth of Massachusetts.

Be it known that whereas Avigdor M. Morgan, Jack Levy, and Butler F. Perry have associated themselves with the intention of forming a corporation under the name of Short Wave and Television Laboratory, Inc., for the purpose of the following: To buy, sell, manufacture, import, export and deal in electric, electrical, radio, short wave, radio vision and television apparatus, parts and equipment, and in articles connected therewith used in the construction or operation or maintenance of electric, electrical, radio, short wave, and television devices of all kinds and descriptions. To acquire and sell inventions, patent rights, letters patent, copyrights and trade-marks covering any articles manufactured or dealt in by this corporation. To purchase or otherwise acquire, construct, improve, hold, own, maintain, mortgage, convey, assign, release or otherwise alienate or dispose of real estate of all kinds, and

interests of all kinds in real estate in The Commonwealth of Massachusetts and elsewhere necessary to the business of the corporation, also personal property rights, franchises and privileges of all kinds necessary to the business of the corporation. To do anything further for the purpose of transacting such other business as may be incidental and necessary to the foregoing. To make and enter into any and all type of contract not prohibited by law. To buy, sell, manufacture, import, export, deal in and install
public address systems and speech amplifiers; with
81 an authorized capital stock of one thousand shares,
common, without par value. The number of shares of capital stock now to be issued is one thousand shares of common stock without par value, to be paid for as follows: In Cash: in full, five thousand dollars, representing five hundred and two shares; in Personal Property: services, four hundred and ninety-eight shares. (Services consist of agreements under contract with Avigdor M. Morgan (who is to receive one hundred and twenty-five shares) to act as chief executive; with Hollis S. Baird (who is to receive one hundred and twenty-four shares) to act as engineer and technician in the development of patents, etc.; with Jack Levy (who is to receive one hundred and twenty-four shares) to act in the merchandising of the products of the corporation; and with Edward P. Barry (who is to receive one hundred and twenty-five shares) to act as counsel to the corporation, all for a period of one year, to devote all additional time required outside of regular services, and to refrain from engaging in competing lines of business and to refrain from becoming interested in similar lines. These shares will not be issued until the services have been rendered); and have complied with the provisions of the Statutes of this Commonwealth in such case made and provided, as appears from the Articles of Organization of said corporation, duly approved by the Commissioner of Corporations and Taxation and recorded in this office:

Now, therefore, I, Frederic W. Cook, Secretary of the Commonwealth of Massachusetts, do hereby certify that said Avigdor M. Morgan, Jack Levy, and Butler F. Perry, their associates and successors, are legally organized and established as, and are hereby made, an existing corporation under the name of Short Wave and Television Laboratory, Inc., with the powers, rights and privileges and subject to the limitations, duties and restrictions, which by law appertain thereto.

Witness my official signature hereunto subscribed, and the Great Seal of the Commonwealth of Massachusetts hereunto affixed, this fifth day of December, in the year of our Lord one thousand nine hundred and twenty-eight.

(Signed) F. W. COOK,
[L. S.] *Secretary of the Commonwealth.*

82 CAS:HGD.

The Commonwealth of Massachusetts, Office of the Secretary.

Boston, March 14, 1930.

I hereby certify that the foregoing is a true copy of the record of the Certificate of Incorporation of Short Wave and Television Laboratory, Inc., organized under the provisions of chapter one hundred and fifty-six of the General Laws.

Witness the Great Seal of the Commonwealth.

[SEAL.] F. W. COOK,
Secretary of the Commonwealth.

(Here follow photographs numbered 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, and 106.)

107 Docket No. 745.

WLEY Exhibit 1.

Hart, Dice & Carlson, Official Reporters.

May 8, 1930.

Introduced at Hearing Before Federal Radio Commission.

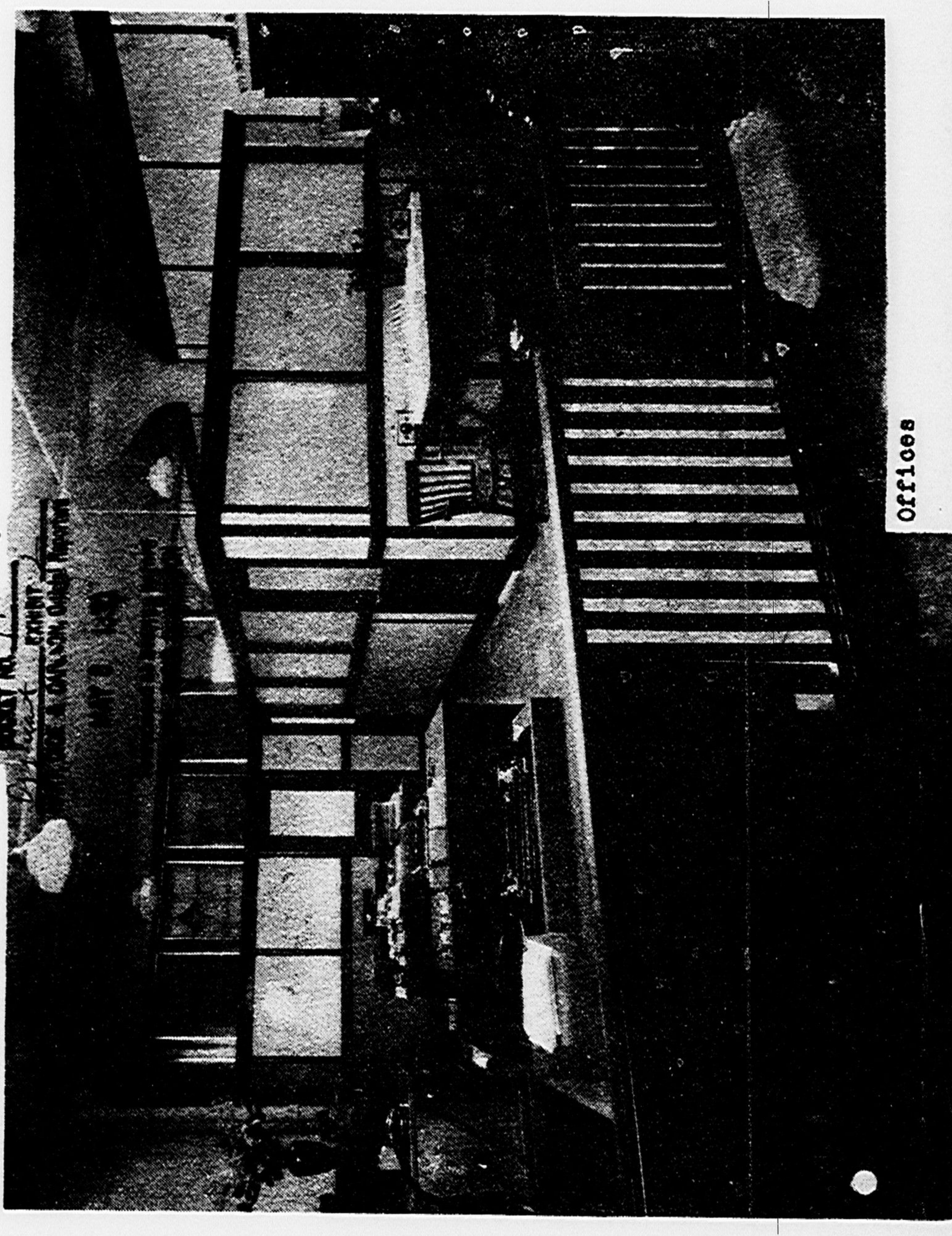
Ref.: File No. 1-P-B-924.

May 5, 1930.

Commonwealth of Massachusetts,
Suffolk, ss:

I, Stanley M. Lane, hereby state that I am duly appointed Chairman of the Radio Committee of the Tremont Temple

No. 5227.)
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 83 & 84.
Federal Radio Commission)



Offices

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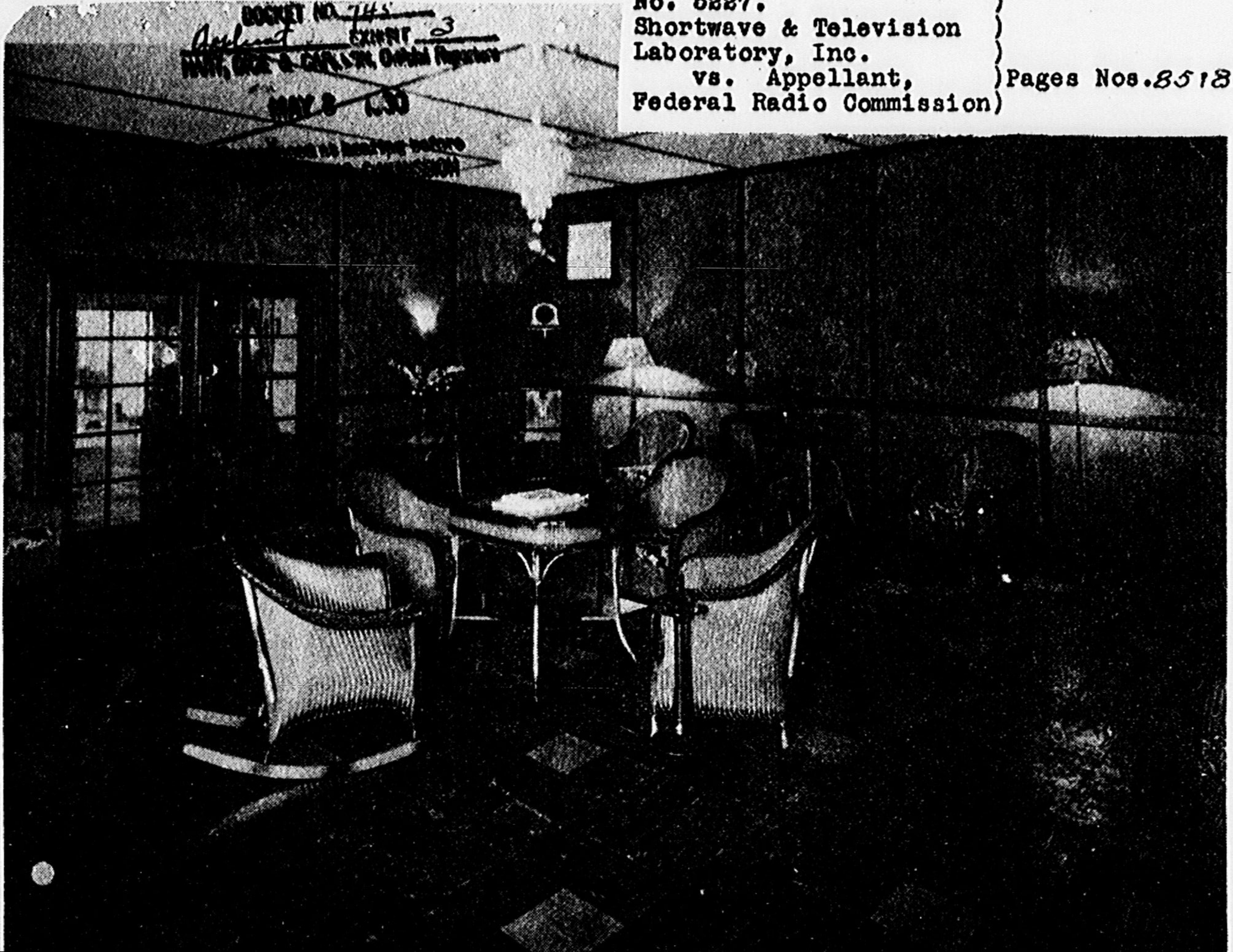
from the original bound volume

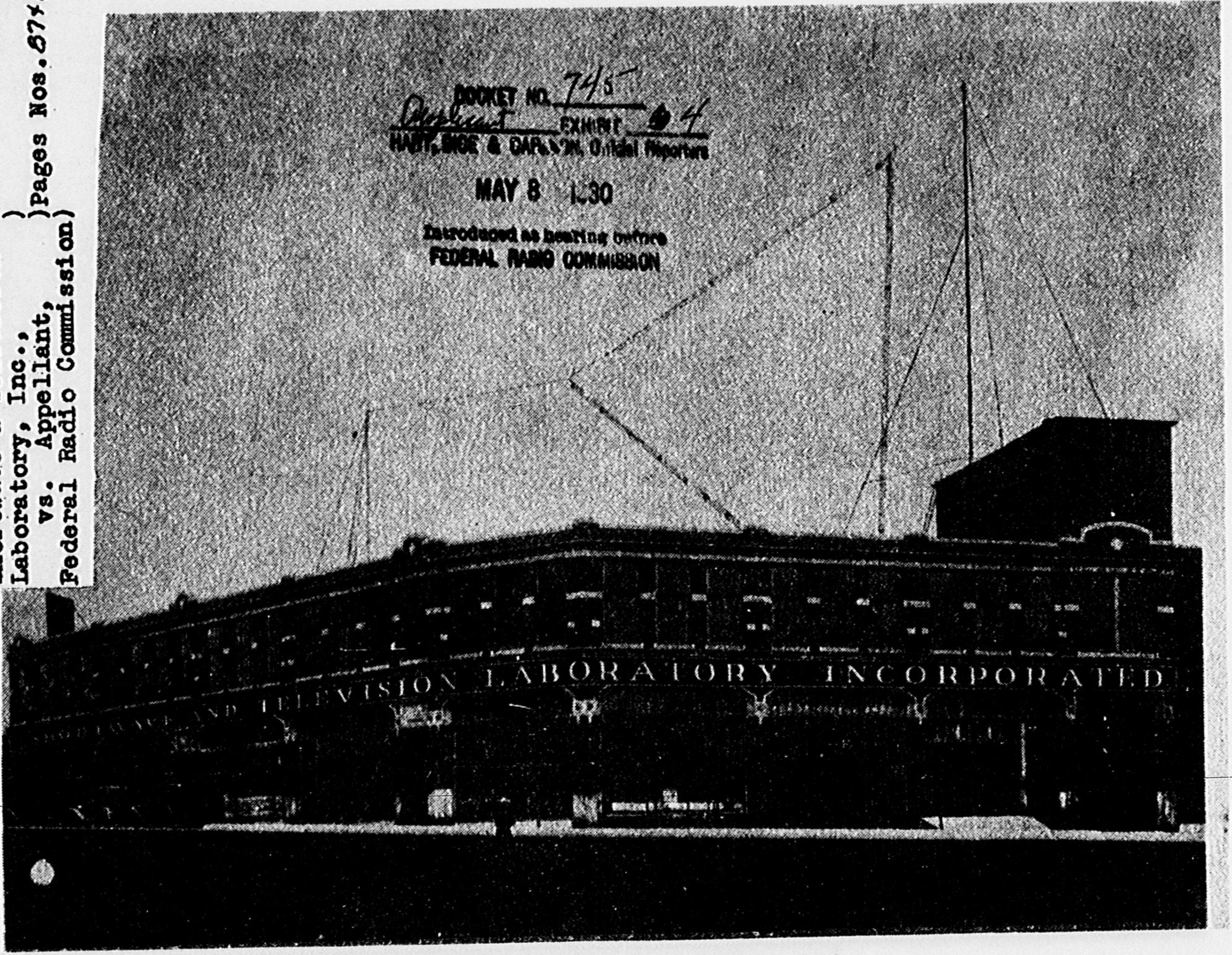
No. 5227.)
Shortwave & Television)
Laboratory, Inc.)
vs. Appellant,)Pages Nos. 85,86
Federal Radio Commission)

DOCKET NO. 745
Appellant EXHIBIT 3
[illegible] Official Reporters
MAY 8 1930
[illegible] COMMISSION



Reception Room--
sound proof studio can be seen
through French doors.

No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 87+88.
Federal Radio Commission)



DOCKET NO. 745
Applicant EXHIBIT 4
HART, RICE & GARRISON, Official Reporters
MAY 8 1930
Introduced at hearing before
FEDERAL RADIO COMMISSION

All upper half our studios and
factory--20000 sq. feet.

Appl Ex 5

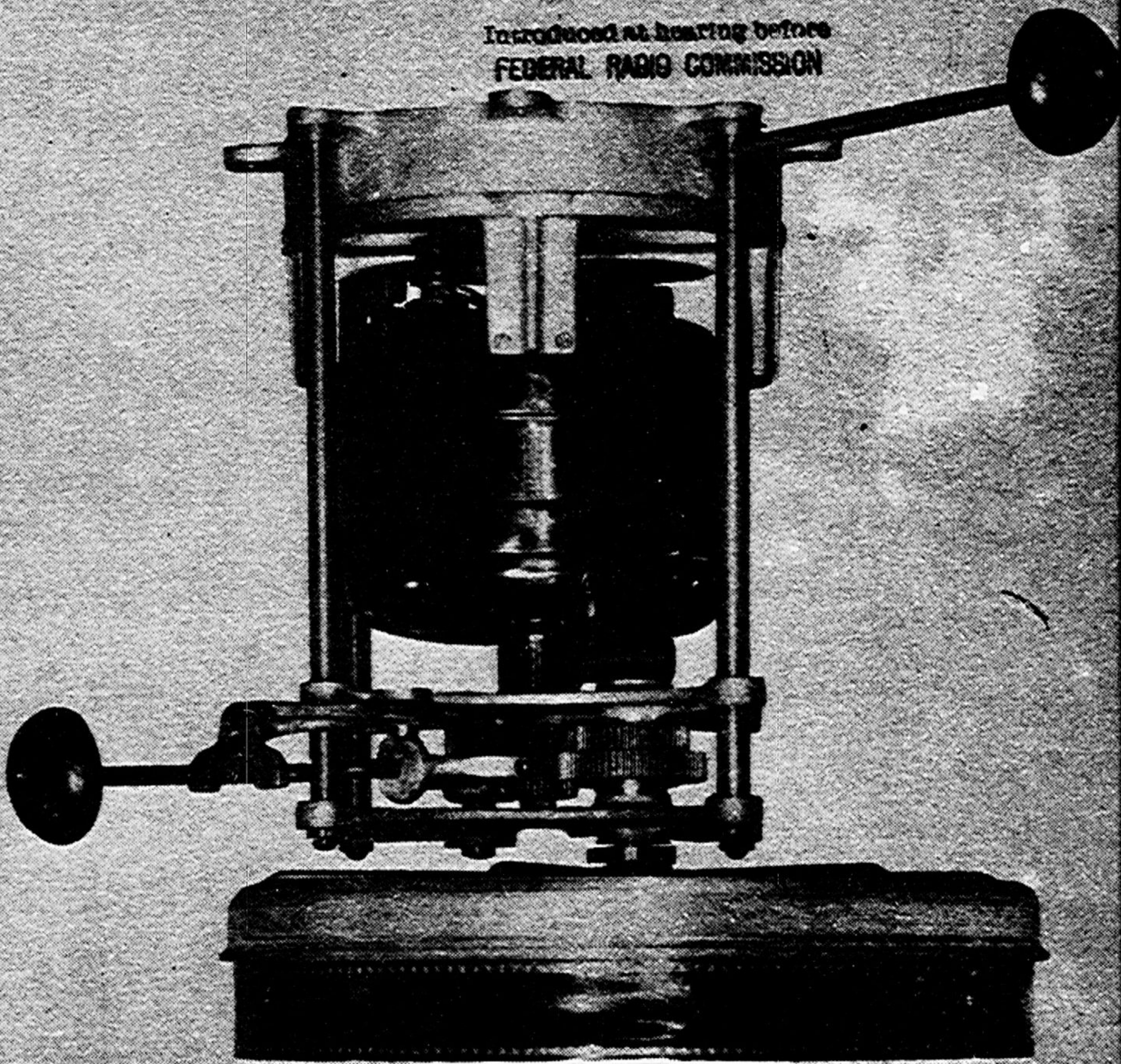
DOCKET NO. 745

Applicant EXHIBIT 2

HART, [illegible] & CARLTON, Official Reporters

MAY 8 1930

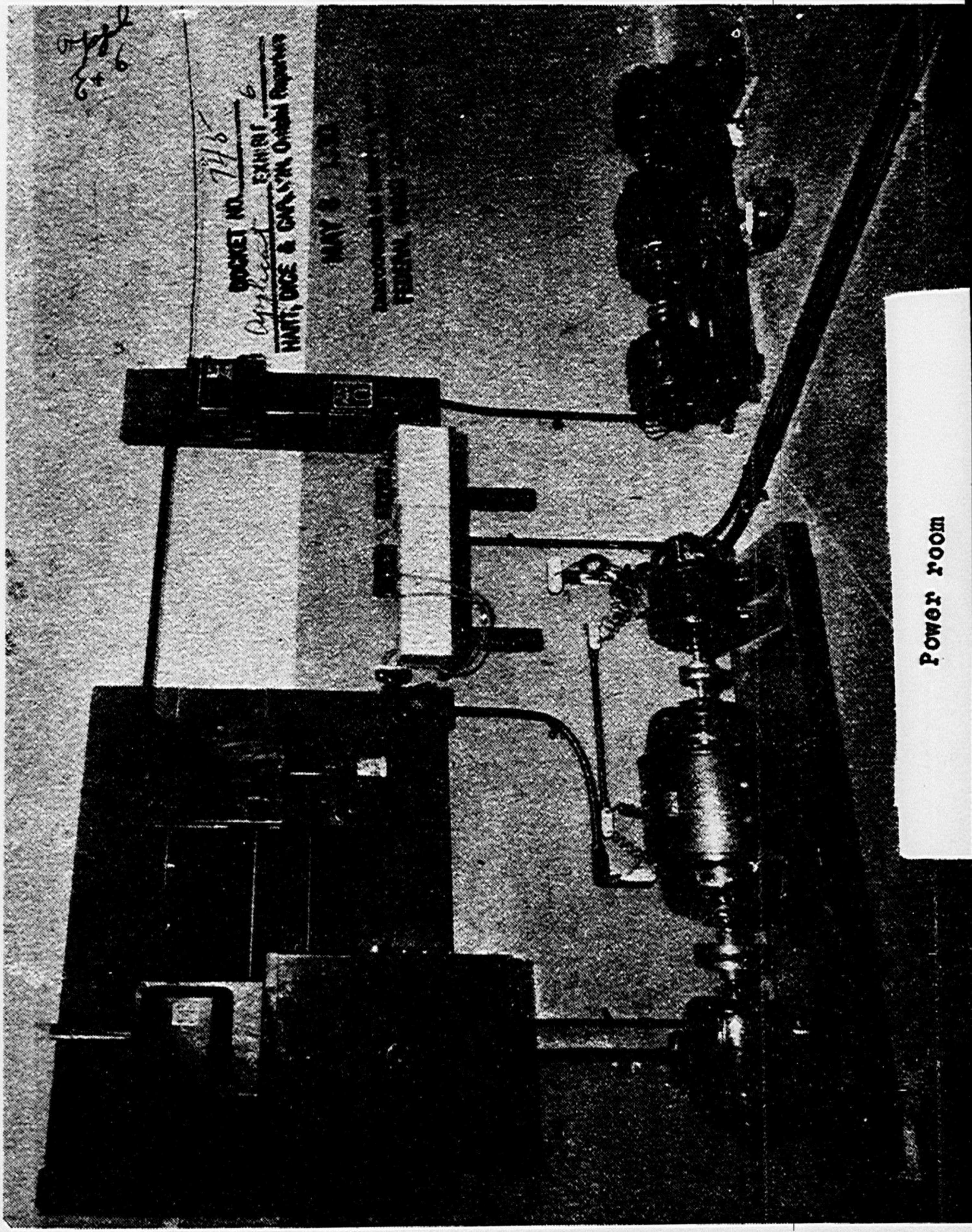
Introduced at hearing before
FEDERAL RADIO COMMISSION



Television chassis

No. 5227.)
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 89 & 90
Federal Radio Commission)

No. 5227.   )
Shortwave & Television)
Laboratory, Inc.,   )
    vs. Appellant,   )Pages Nos. 91-92
Federal Radio Commission)



Power room

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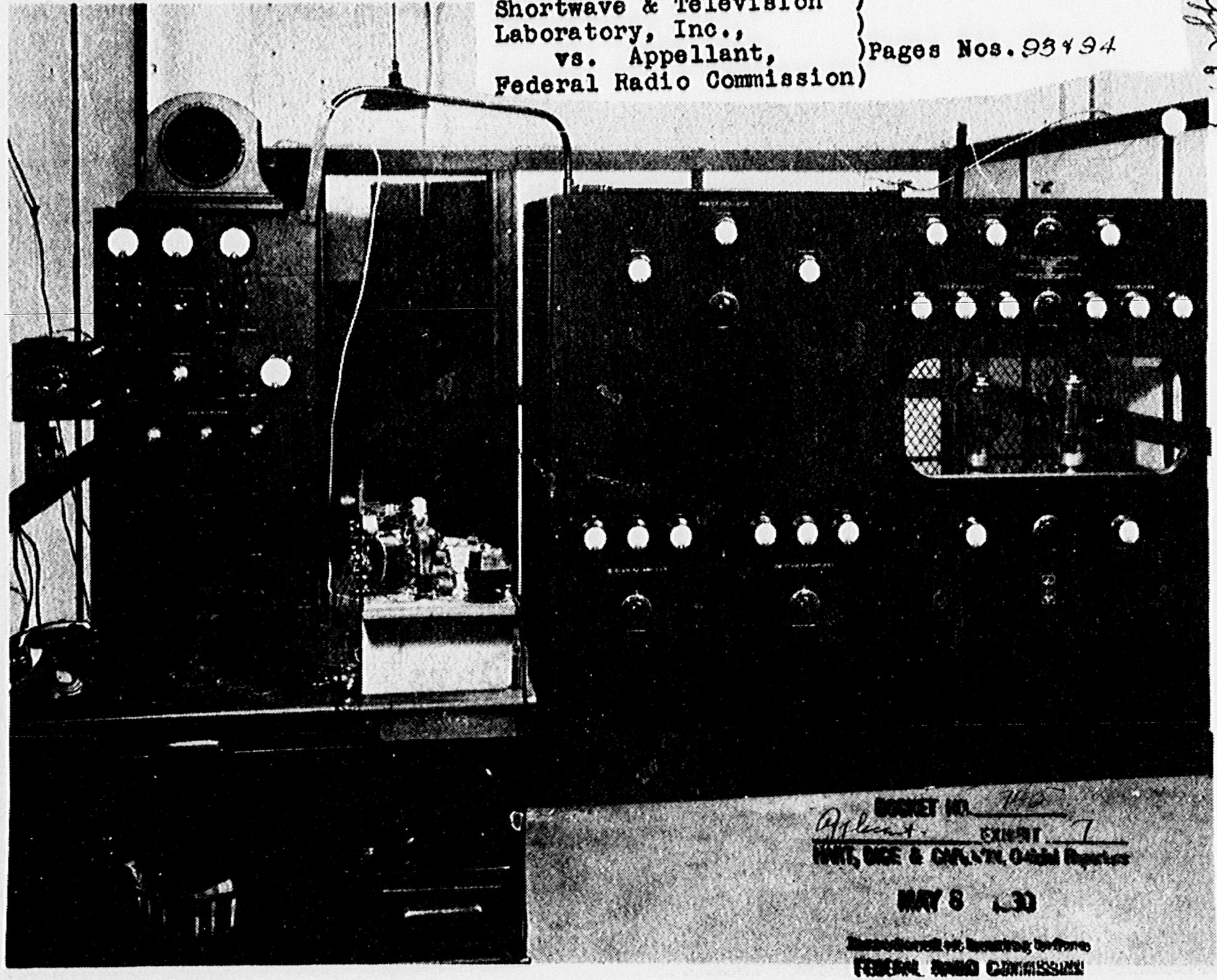
No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 93+94
Federal Radio Commission)

Appl Ex 7

WIXAV
taken before completion--
Relay systems not shown.



DOCKET NO. 745
Applnt. EXHIBIT 7
HART, DICE & CHRISTIE, Official Reporters
MAY 8 1930
Introduced at hearing before
FEDERAL RADIO COMMISSION

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Appl Ex 8

DOCKET NO. 143

Applicant EXHIBIT 8

HART, DIGE & CARSON, Original Reporters

MAY 8 1930

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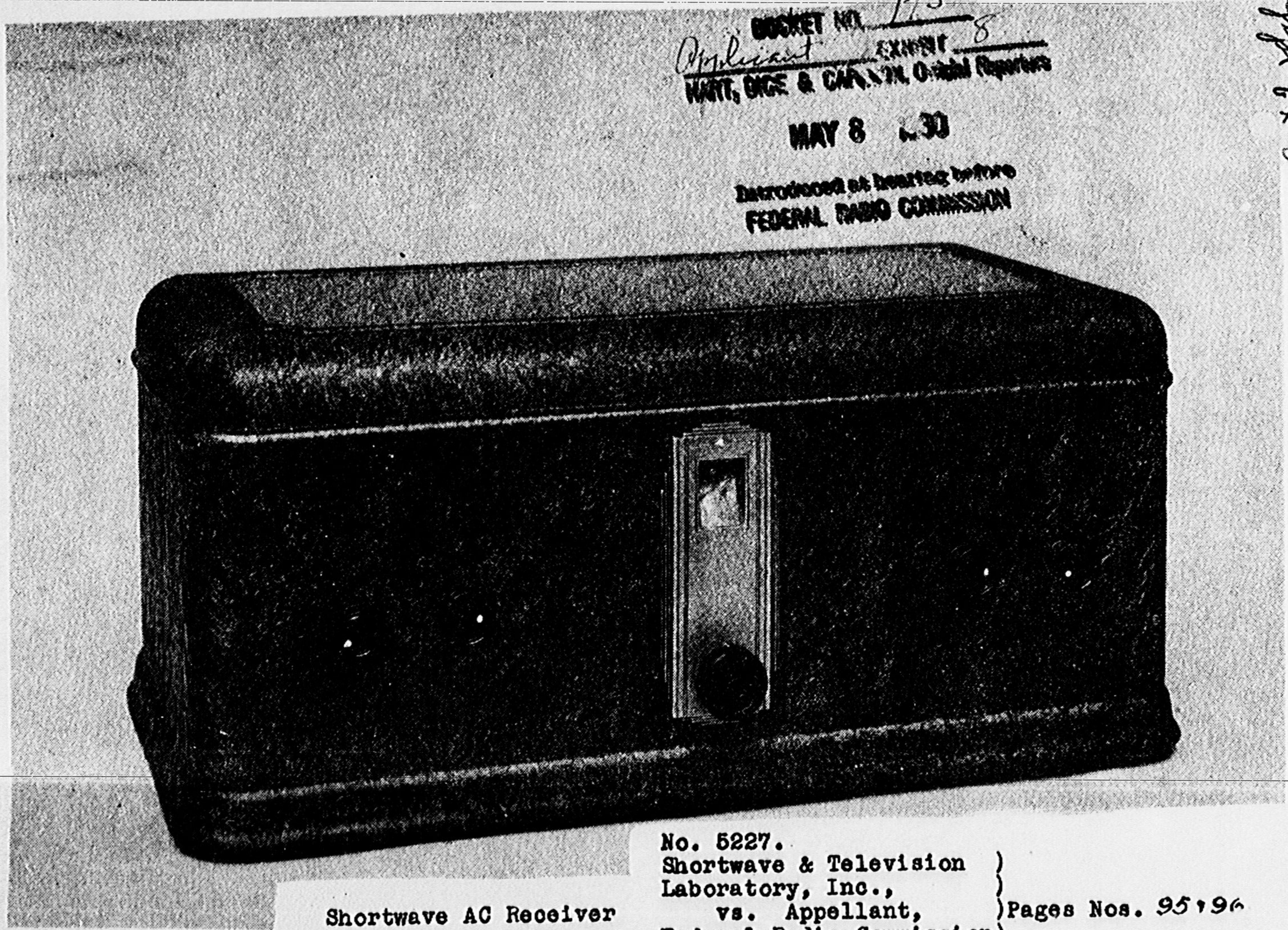
FEDERAL RADIO COMMISSION



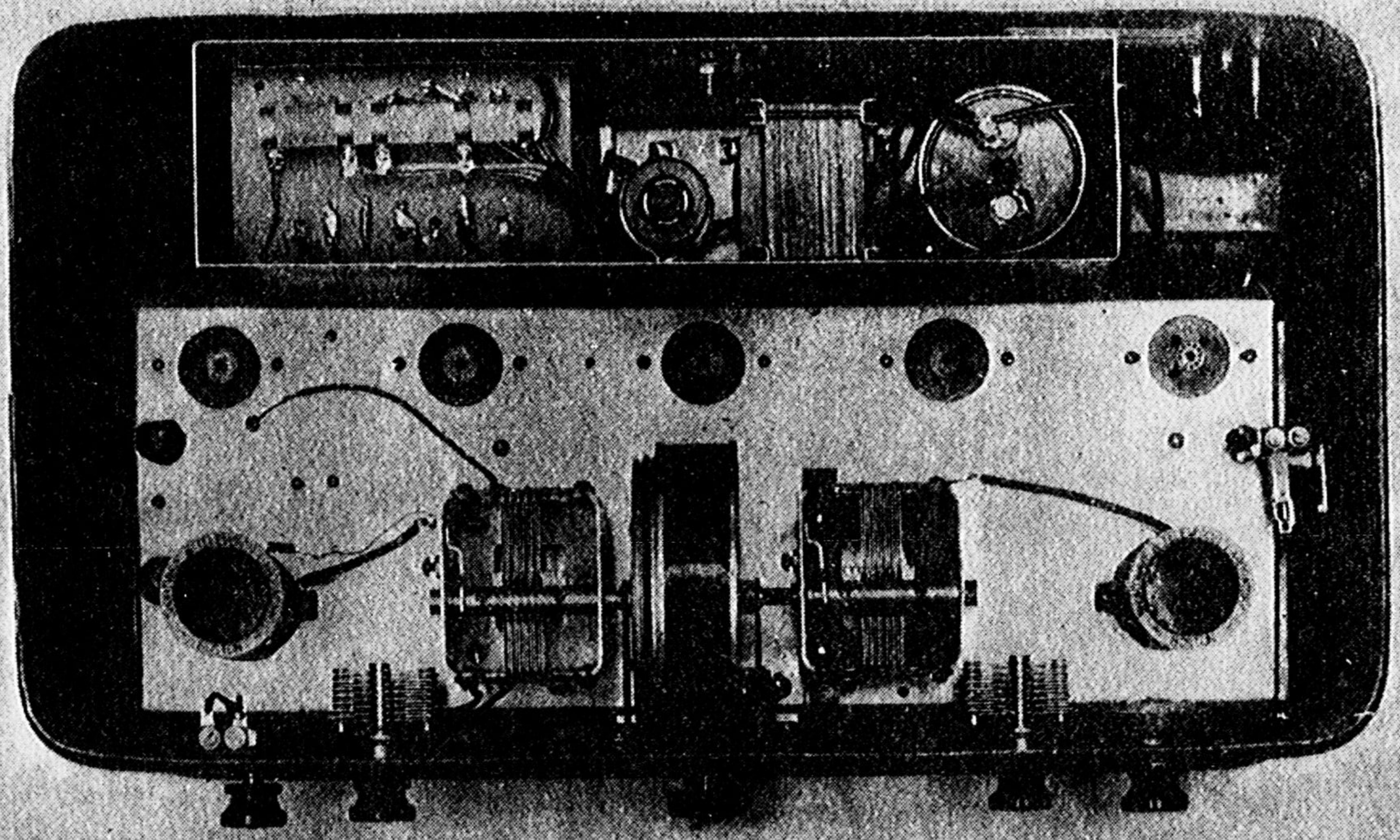
Shortwave AC Receiver

No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 95, 96
Federal Radio Commission)

No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 97 & 98.
Federal Radio Commission)

DOCKET NO. 745
Appellant EXHIBIT 9
HART, DICE & CARLSON, Official Reporters
MAY 8 1930
Introduced at hearing before
FEDERAL RADIO COMMISSION

Appl Ex 9



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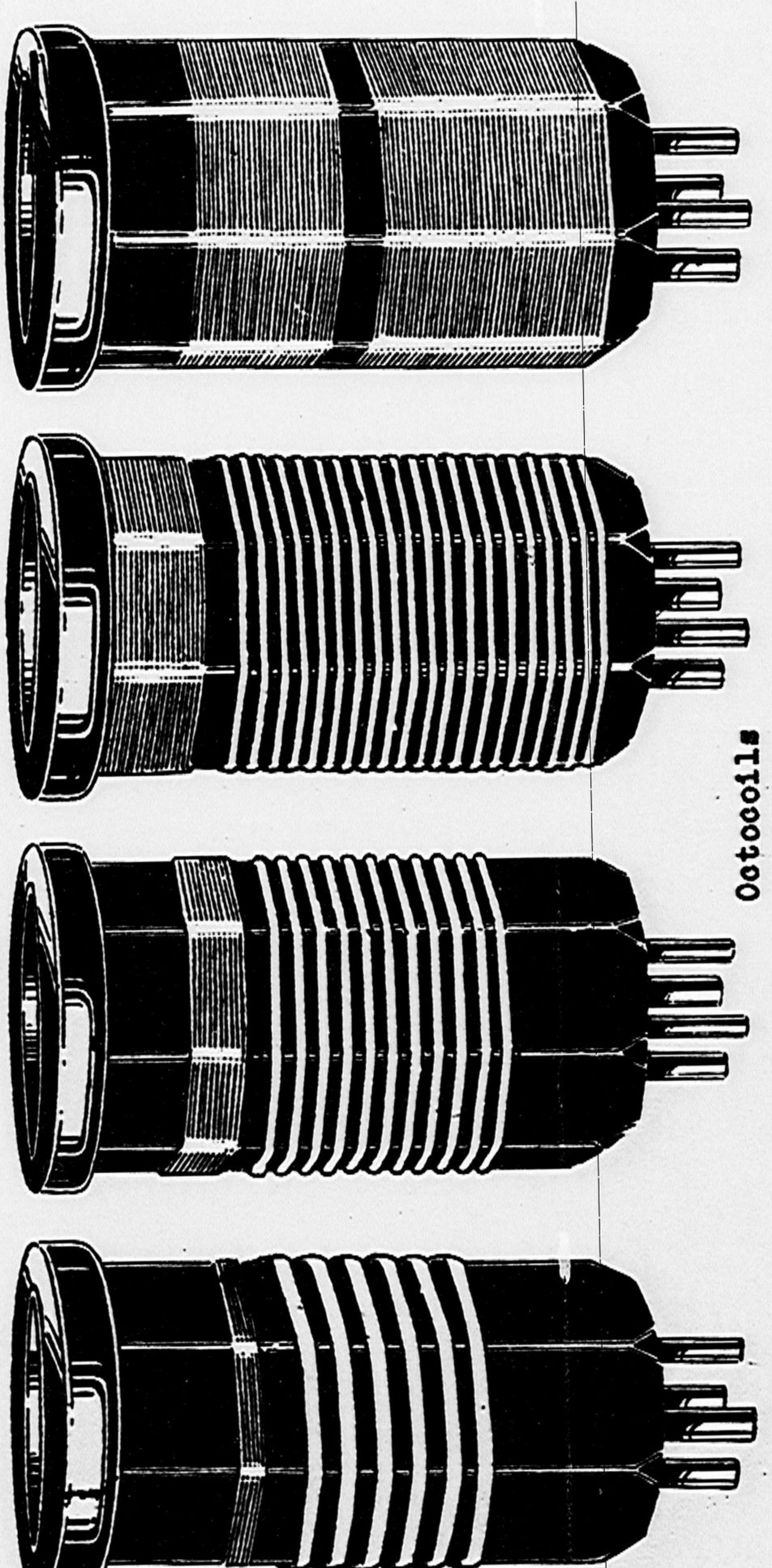
appl Ex 10

No. 5227.   )
Shortwave & Television   )
Laboratory, Inc.,   )
    vs. Appellant,   )Pages Nos. 99+100
Federal Radio Commission)

DOCKET NO. 745
Appellant EXHIBIT 10
HART, DICE & CARVER, Official Reporters
MAY 8 30
Introduced at hearing before
FEDERAL RADIO COMMISSION



Octocoils

99 100

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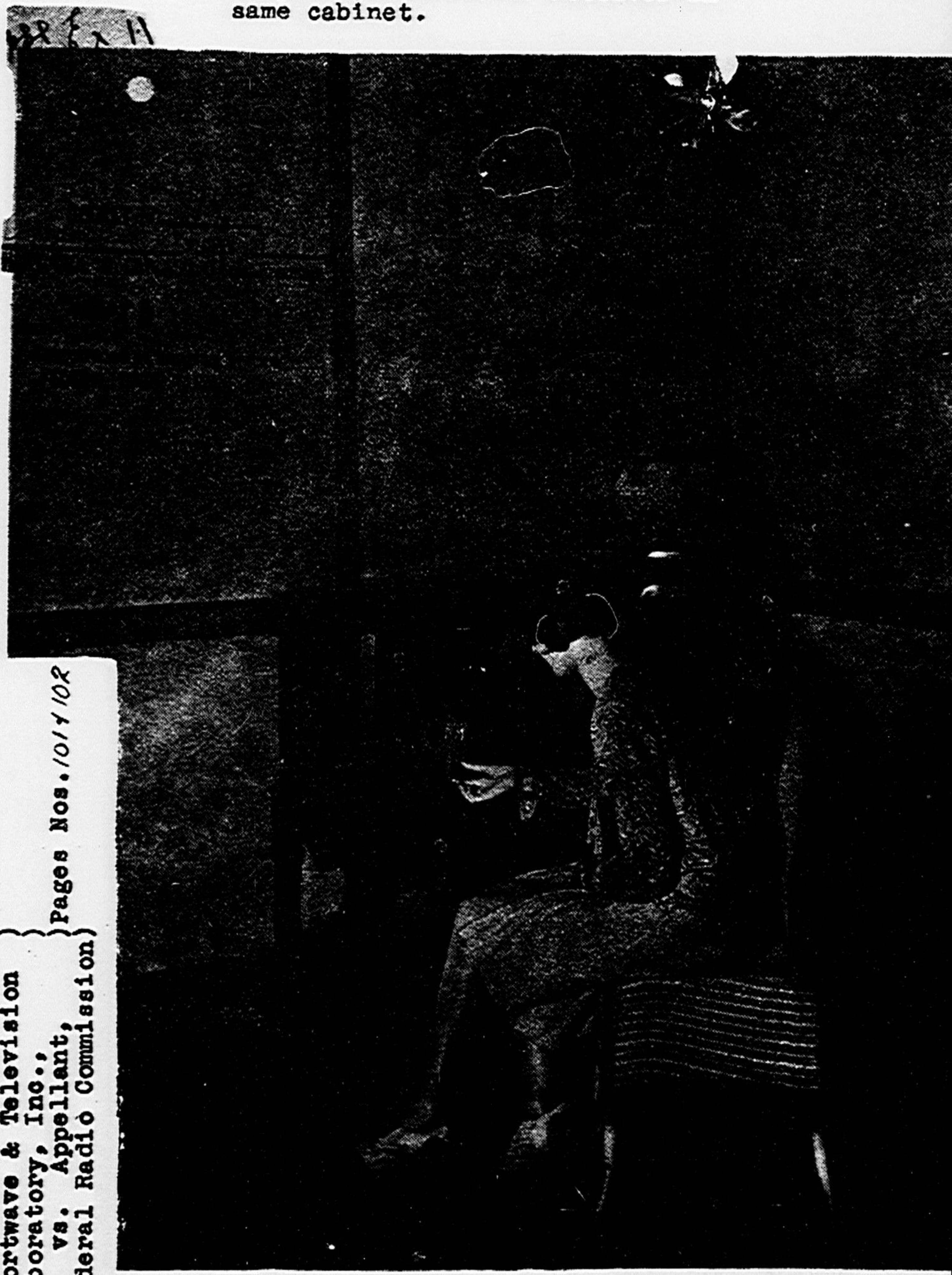
Television receiver (console model)
complete, with S. W. Receiver in
same cabinet.


Ex 11

No. 5887.
Shortwave & Television
Laboratory, Inc.,
vs. Appellant,
Federal Radio Commission
Pages Nos. 101 & 102

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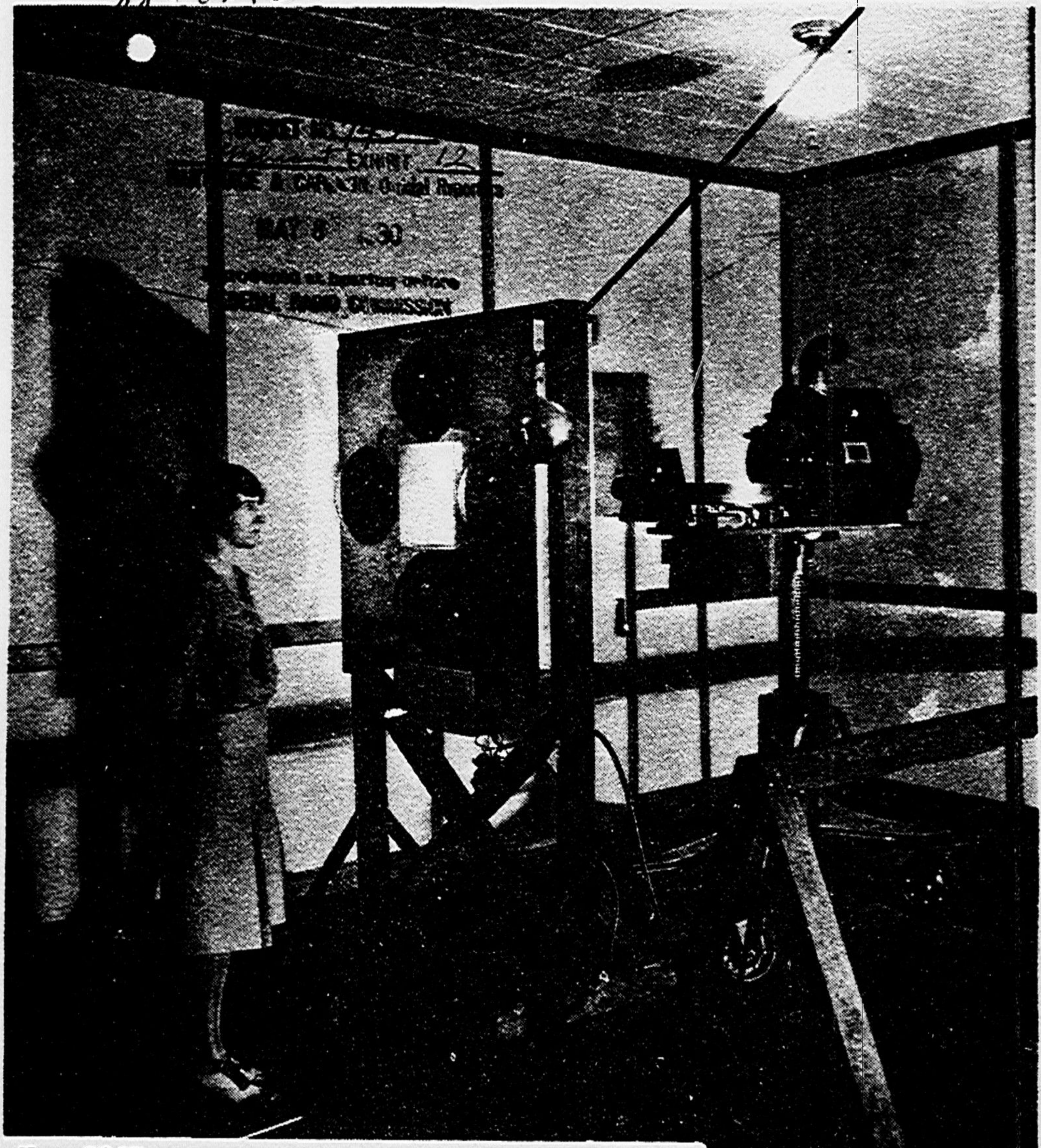
Scanning equipment partially
completed--showing horizontal
transmitting unit.

Appt Ex 12



DOCKET No. [illegible]
[illegible] EXHIBIT 12
[illegible] Official Reporters
MAY 8 1930
[illegible] at hearing before
FEDERAL RADIO COMMISSION

No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 103 + 104
Federal Radio Commission)

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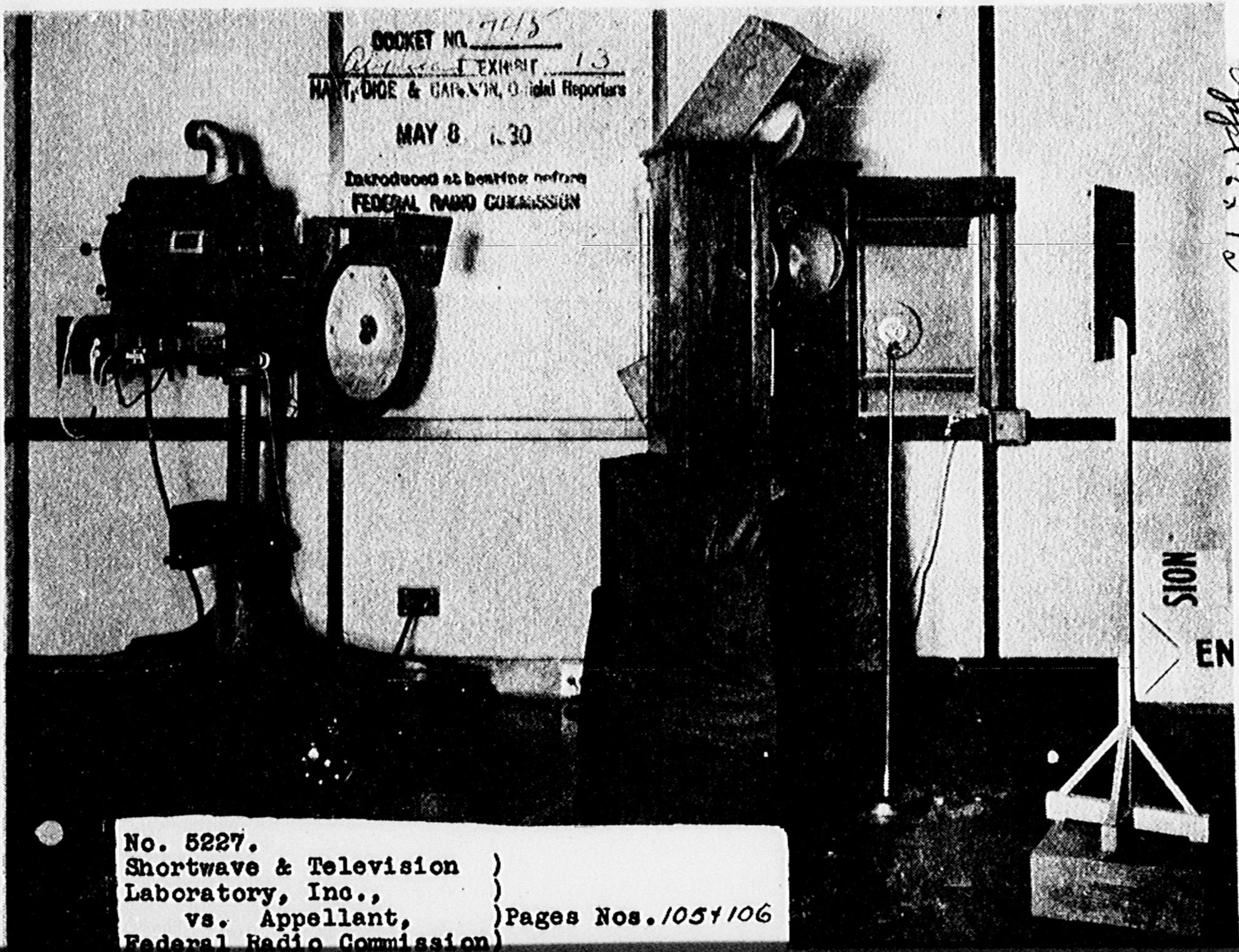
Appl Ex 13



DOCKET NO. 7015

Applicant EXHIBIT 13

HART, DICE & CARSON, Official Reporters

MAY 8 1930

Introduced at hearing before
FEDERAL RADIO COMMISSION

No. 5227.
Shortwave & Television)
Laboratory, Inc.,)
vs. Appellant,)Pages Nos. 105+106
Federal Radio Commission)

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WLEY 1410 ← 40K → WLEY 1370

Wley #2

DOCKET NO. 745

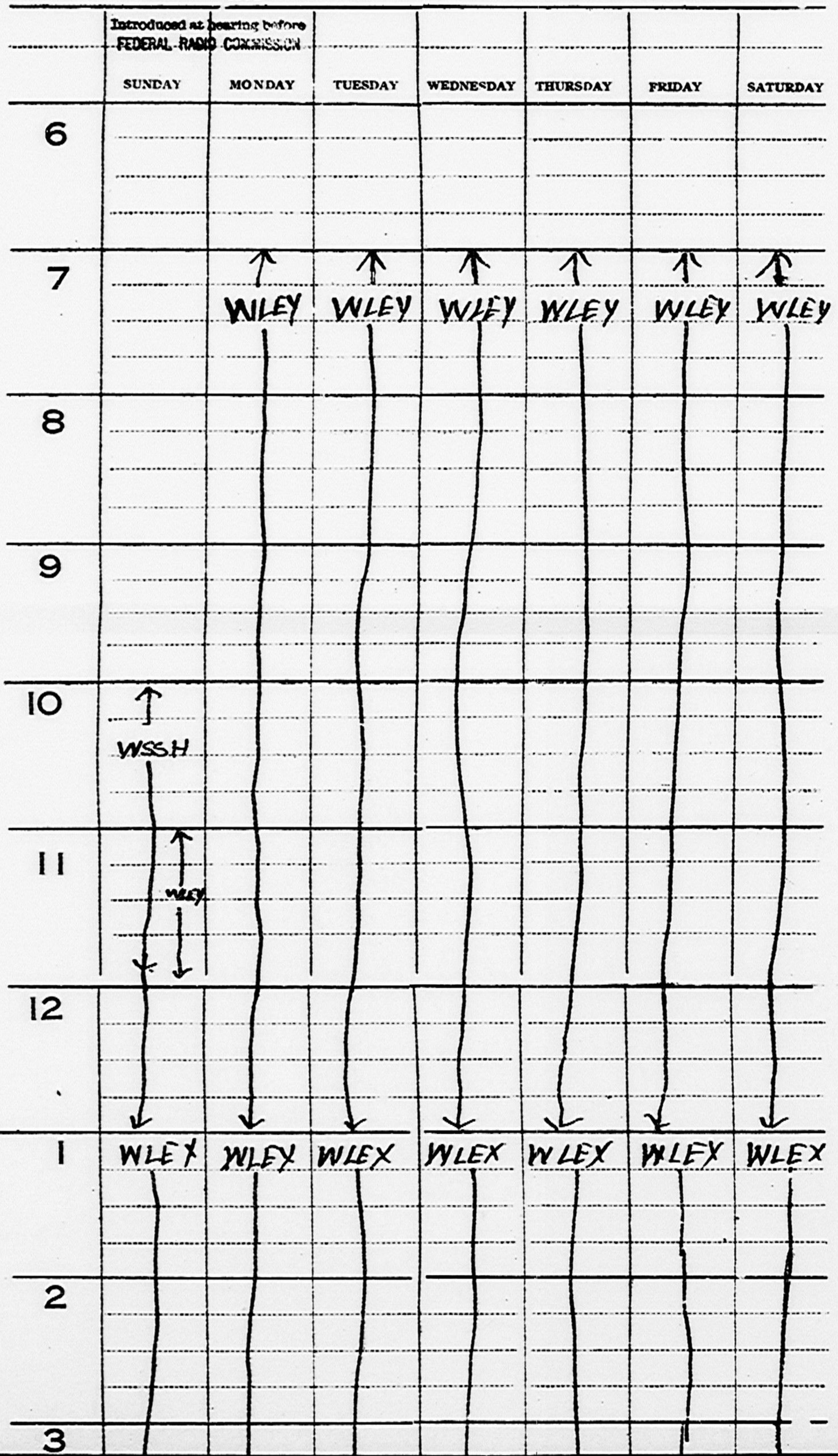
WLEY EXHIBIT 2

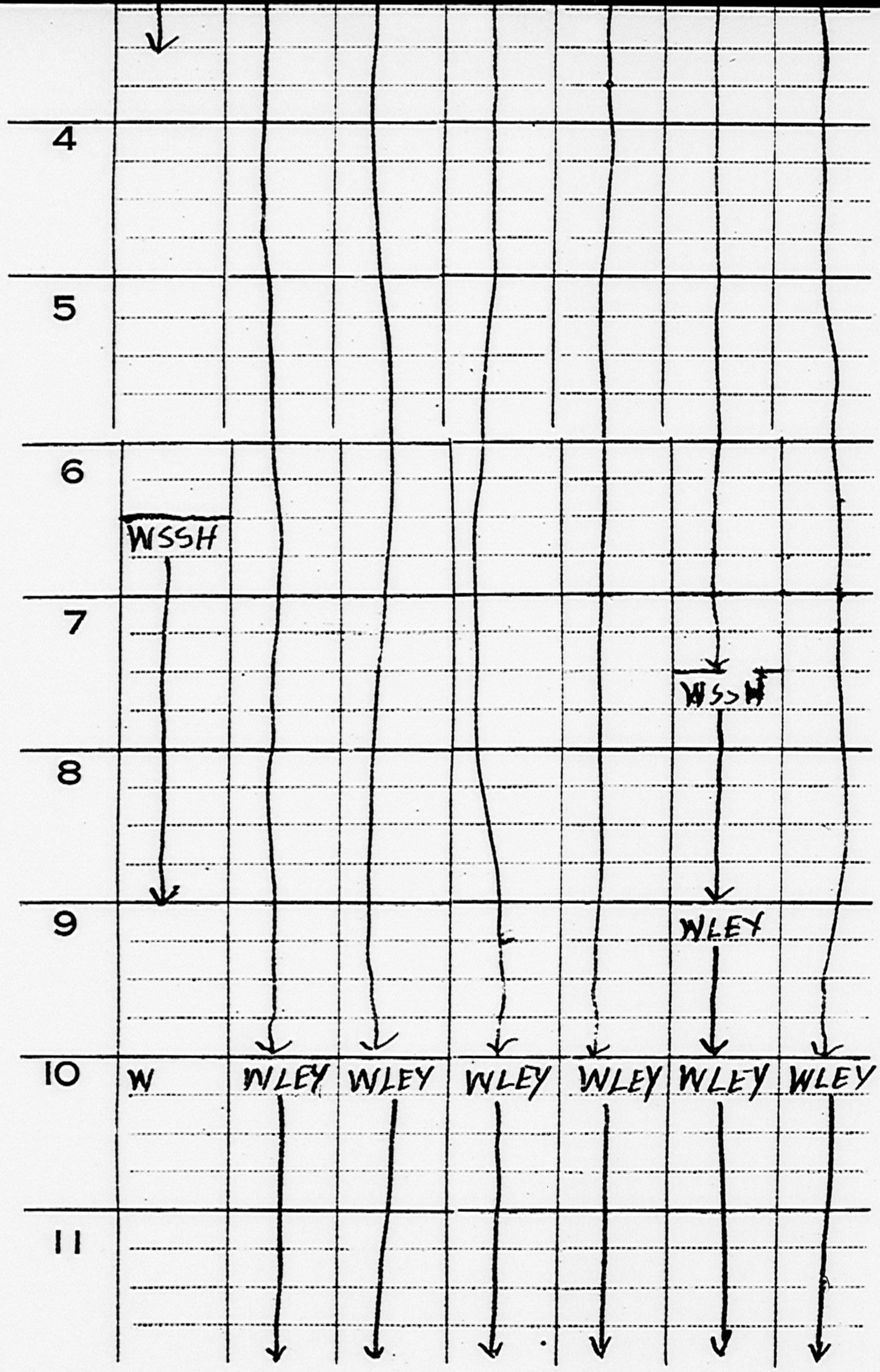
HART, DICE & CARSON, Official Reporters

MAY 8 1930

No. 5227.
Shortwave and Television Laboratory, Inc., Appellant,
vs
Federal Radio Commission.
Page 108.

Introduced at hearing before
FEDERAL RADIO COMMISSION




4
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11

Baptist Church of Boston and as such am authorized by said Radio Committee to make the following statements:

(1) That Tremont Temple Baptist Church broadcasting station WSSH is operated by authority of the Federal Radio Commission on a regional frequency of 1410 KC; that our broadcasting station is not a part of any broadcasting chain and depends on a direct broadcast of its programs to reach all of New England; that letters from all over New England would indicate to us that the public is interested in the elimination of any interference caused by broadcasting stations operating too near our frequency assignment.

(2) That, inasmuch as the application of the Short Wave and Television Laboratory Inc., for a construction permit, is for a frequency assignment of only 40 KC separation from our assignment of 1410 KC, that a permit granted on a frequency of 1370 KC would in some cases interfere with the reception of our programs. (The Short Wave and Television Laboratory Inc. is located in the city of Boston within two miles of Station WSSH, 1410 KC.)

(3) That experience has shown that broadcasting stations located within a short distance of each other, when broadcasting simultaneously, should have at least 50 KC frequency separation.

(4) Therefore I would conclude that it would not be for the public interest, convenience, or necessity that a broadcasting permit be granted to the applicant on 1370 KC.

STANLEY M. LANE,
STANLEY M. LANE,
Chairman Radio Committee,
Tremont Temple Baptist Church.

COMMONWEALTH OF MASS.,
County of Suffolk, ss:

Boston, May 5, 1930.

Then personally appeared before me Stanley M. Lane who being duly sworn states that the above statements are made by him and are correct to the best of his knowledge and belief.

[SEAL.] ALBERT E. FRASER,
Notary Public.

Commission expires Oct. 14, 1934.

(Here follows diagram, marked page 108.)

109 Copy.

Form No. 20-A.

File No.: ——. Official No.: 201. Call Letters: WLEY.

United States of America, Federal Radio Commission.

Radio Broadcasting Station License.

Subject to the provisions of the Radio Act of 1927, as amended, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to conditions set forth in this license, the licensee, Carl S. Wheeler, doing business as The Lexington Air Stations, is hereby authorized to use and operate the radio transmitting apparatus hereinafter described for the purpose of broadcasting for the term beginning 3 a. m. Eastern Standard Time, January 31, 1930, and ending 3 a. m., Eastern Standard Time, March 2, 1930.

The licensee shall use and operate said apparatus only in accordance with the following terms:

1. On a frequency of 1,420 kc.

2. With power not in excess of 100 watts, with an additional 150 watts (a) from local sunrise to local sunset only; (b) ——; (c) ——. Height of Antenna (from ground or counterpoise to highest point of Antenna): —— meters. Antenna current: —— amperes.

3. During the following period or periods of time: Assigned one-half time on this channel.

4. Under the call letters assigned by the Secretary of Commerce, i. e., WLEY.

5. With the main studio of the station located at Adams St., Lexington, Mass.

The apparatus hereinabove authorized to be used and operated is located at Adams St., Lexington, Mass.—Lat. 42° 27′ 58.5″ North. Long. 71° 12′ 45.1″ West, and is described as follows: Composite—V. T. Telephone.

For emergency purposes only, when by reason of breakdown or similar reason the said apparatus can not be used, the licensee is authorized to use and operate (but only in accordance with the terms and conditions of this license) the auxiliary radio transmitting apparatus located at —— and described as follows: ——.

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such broadcasting service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequency designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Radio Act of 1927 as amended. This license is subject to the right of use or control by the Government of the United States conferred by Section 6 of the Radio Act of 1927.

Dated this 27th day of January, 1930.

(Signed) FEDERAL RADIO COMMISSION.
[SEAL.] By IRA E. ROBINSON,
Chairman.

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110 Copy.

Form. No. 20-A.

File No.: 1-R-B-201. Official No.: 201. Call Letters: WLEY.

United States of America, Federal Radio Commission.

Radio Broadcasting Station License.

Subject to the provisions of the Radio Act of 1927, as amended, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to conditions set forth in this license, the licensee, Carl S. Wheeler, doing business as The Lexington Air Stations, is hereby authorized to use and operate the radio transmitting apparatus hereinafter described for the purpose of broadcasting for the term beginning 3 a. m. Eastern

Standard Time April 30, 1930, and ending 3 a. m. Eastern Standard Time July 31, 1930.

The licensee shall use and operate said apparatus only in accordance with the following terms:

1. On a frequency of 1,370 kc.

2. With power not in excess of 100 watts, with an additional —— watts (a) from local sunrise to local sunset only; (b) for experimentation to determine whether interference results; (c) ——. Height of Antenna (from ground or counterpoise to highest point of Antenna): —— meters. Antenna current: —— amperes.

3. During the following period or periods of time: Assigned one-half time on this channel.

4. Under the call letters assigned by the Secretary of Commerce, i. e., W L E Y.

5. With the main studio of the station located at Adams St., Lexington, Mass.

The apparatus hereinabove authorized to be used and operated is located at Adams St., Lexington, Mass.—Lat. 42° 28′ 58.5″ North, Long. 71° 12′ 45.1″ West, and is described as follows: Composite—V. T. Telephone.

For emergency purposes only, when by reason of breakdown or similar reason the said apparatus can not be used, the licensee is authorized to use and operate (but only in accordance with the terms and conditions of this license) the auxiliary radio transmitting apparatus located at —— and described as follows: ——

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such broadcasting service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequency designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Radio Act of 1927 as amended. This license is subject to the right of use or control by the Government of the United States conferred by Section 6 of the Radio Act of 1927.

Dated this 25th day of April, 1930.

By direction of the Federal Radio Commission.

[SEAL.] By FRANK H. LOVETTE,
Acting Secretary.

111 Federal Radio Commission, Washington, D. C.

General Order No. 55.

At a session of the Federal Radio Commission held at its offices in Washington, D. C., on December 22, 1928.

The Commission, in order to carry out the provisions of the Radio Act of 1927, having determined that public interest, convenience, or necessity requires the allocation of certain frequencies, within the band of frequencies between 1500 and 6000 kilocycles, to those services and classes of stations hereinafter enumerated, hereby enters the following order.

It is ordered:

Paragraph 1. That of those frequencies between 1500 and 6000 kilocycles, the following are hereby allocated to those services and classes of stations enumerated herein, for assignment to individual stations in conformity with this order.

(*a*) *Mobile Services.*

1. Ship Stations and Coastal Stations: The frequencies 1504, 1508, 1512, 1516, 1520, 1524, 1528, 1532, 1536, 1540, 1544, 1548, 1552, 1556, 1560, 1564, 1568, 1572, 1576, 1580, 1584, 1588, 1592, 1596, 1660, 1672, 1684, 1708, 2320, 2332, 2350, 2368, 2380, 2416, 2428, 2446, 2452, 2476, 2482, 2554, 2566, 2584, 2596, 2614, 2626, 2632, 2638, 2644, 2668, 2692, 2728, 2740, 3076, 3106, 3118, 3130, 3142, 3420, 2428, 3436, 4116, 4148, 4172, 4188, 4196, 4755, 4775, 5525, 5555, 5585, 5615, 5645, 5675.

112 2. Aircraft and aeronautical stations: The frequencies, 1608, 1612, 1616, 1620, 1624, 1628, 1632, 1636, 1640, 1644, 1648, 1656, 1668, 1676, 1688, 2302, 2326, 2344, 2362, 2374, 2392, 2506, 2518, 2524, 2530, 2536, 2542, 2560, 2578, 2590, 2608, 2620, 2650, 2662, 2680, 2698, 2722, 2734, 3070, 3082, 3100, 3112, 3124, 3136, 3148, 3452, 3460, 3468, 3484,

3492, 4108, 4124, 4140, 4164, 4180, 4765, 4785, 5510, 5540, 5570, 5600, 5630, 5660, 5690.

3. Portable stations: The frequencies 1600, 1652, 1664, 1680, 1704, 1712.

4. Railroad rolling stock stations and railroad harbor and tug stations: The frequencies 2410, 2422, 2440, 2458, 2470.

(*b*) Fixed Services.

1. Point to Point: The frequencies 3202, 3208, 3214, 3220, 3226, 3238, 3244, 3250, 4212, 4220, 4228, 4244, 4268, 4276, 4284, 4396, 4405, 4415, 4455, 4465, 4475, 4485, 4495, 4505, 4515, 4535, 4545, 4865, 4875, 4885, 4895, 4905, 5115, 5125, 5135, 5145, 5155, 5165, 5175, 5185, 5195, 5205, 5215, 5225, 5235, 5245, 5255, 5265, 5275, 5285, 5295, 5305, 5405, 5415, 5425, 5435, 5445, 5455, 5465, 5475, 5485, 5720, 5735, 5750, 5765, 5780, 5795, 5900, 5975, 5990.

2. Amateur: The band of frequencies between 1715 and 2000 kilocycles inclusive, and that band of frequencies between 3500 and 4000 kilocycles, inclusive.

113 3. Experimental visual broadcasting: The frequencies 2002 to 2300 inclusive, and 2750 to 2950 inclusive.

4. Experimental: The frequencies 1604, 2398, 3088, 4795.

The following frequencies allocated to Fixed Services, Point to Point Stations, are to be assigned exclusively to stations devoted to promoting the interests of agriculture in addition to such assignments as may hereafter be made above 6000 kilocycles. Frequencies 3202, 4244, 5485.

The following frequencies are reserved for assignment to stations rendering emergency services: Frequencies 3208, 3214, 3220, 3226, 3238, 3244, 3250.

Paragraph II. No license shall be granted to any applicant for a fixed station, coastal station, or aeronautical station who is unable to satisfy the Commission that he can maintain the assigned station frequency with an accuracy of .05 per cent or better at all times.

Paragraph III. Licensees of fixed, coastal, or aeronautical stations shall obtain and use for tuning and checking the tuning of their transmitters suitable frequency-measuring equipment which shall be accurate within .025 per cent on the frequencies on which the transmitter is licensed to operate. Furthermore, such licensees shall, at frequent intervals, take steps to have the frequency-measuring instruments calibrated or compared with the standards made available by the Department of Commerce.

114 *Paragraph* IV. Licensees must use radio transmitters, the omissions of which, by reason of actual decrement high-speed signaling modulation, spacing waves, harmonics, frequency modulation, key clicks, and mush, do not cause interference deterimental to traffic and programs being carried out on other authorized channels of communications.

FEDERAL RADIO COMMISSION,
By IRA E. ROBINSON,
Chairman.

115 Federal Radio Commission, Washington. D. C.

General Order No. 74.

At a session of the Federal Radio Commission held at its offices in Washington, D. C., on October 11, 1929.

General Order No. 55 is hereby amended to read as follows:

The Commission, in order to carry out the provisions of the Radio Act of 1927, having determined that public interest, convenience, or necessity requires the allocation of certain frequencies, within the band of frequencies between 1500 and 6000 kilocycles, to those services and classes of stations hereinafter enumerated, hereby enters the following order.

It is ordered:

Paragraph I. That of those channels between 1500 and 6000 kilocycles, the following are hereby allocated to those services and classes of stations enumerated herein, for assignment to individual stations in conformity with this order. Each channel is specified by its center frequency.

(*a*) Mobile Services.

1. Ship Stations and/or coastal stations: *1504, *1508, *1512, 1516, 1520, 1524, 1528, 1532, 1536, 1540, 1548, 1552, 1556, 1560, 1568, 1572, 1576, 1580, 1588, 1592, 1660, 1672,

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*To be reserved as interference guard band for broadcasting stations at all locations where the assignment to other services may result in interference with broadcasting stations.

1684, 1708, 2320, 2332, 2350, 2380, 2428, 2446, 2518, 2524, 2530, 2536, 2542, 2554, 2560, 2566, 2578, 2584, 2590, 2596, 2668, 2692, 2728, 2740, 3112, 3118, 3124, 3130, 3420, 3428, 3436. 5525, calling only.

116 2. Ship stations: 5555, 5615.

3. Coastal stations: 4116, 4148, 4172, 4188, 4196, 4755, 4775, 5675.

4. Mobile press stations: 5645, east of Mississippi River. 5585, west of Mississippi River.

5. Reserved for temporary mobile assignments only: 1544, 1564, 1584, 2368, 2392, 2476.

6. Portable stations: 1600, 1652, 1664, 1680, 1704.

7. Emergency police: 1712, 2416, 2452.

8. Emergency fire (marine): 1596.

9. Reserved for special mobile services other than portable: 2410, 2422, 2440, 2458, 2470.

10. Aircraft and/or aeronautical stations: 1608, 1612, 1616, 1620, 1624, 1628, 1632, 1636, 1640, 1644, 1648, 1656, 1668, 1676, 1688, 2302, 2326, 2344, 2362, 2374, 2482, 2506, 2608, 2614, 2620, 2626, 2632, 2638, 2644, 2650, 2662, 2680, 2698, 2722, 2734, 3070, 3076, 3082, 3088, 3100, 3136, 3142, 3148, 3452, 3460, 3468, 3484, 3492, 4108, 4124, 4140, 4164, 4180, 4765, 4785, 5510, 5540, 5570, 5600, 5630, 5660, 5690.

11. Aircraft stations: 3106, national calling frequency for all transport and itinerant airplanes. 117

(*b*) Fixed Services.

1. Point-to-Point (shared between United States and Canada): 3268, 3274, 3280, 3286, 3298, 3304, 3310, 3316, 3324, 3332.

2. Point-to-point (United States exclusive): 4268, 4276, 4284, 4396, 4405, 4415, 4535, 4545, 4555, 4565, 4575, 4585, 4595, 4605, 4615, 4625, 4635, 4645, 4655, 4665, 4675, 4685, 4695, 4705, 4715, 4725, 4735, 4745, 4925, 4935, 4945, 4955, 4965, 4975, 4985, 4995, 5005, 5015, 5025, 5035, 5045, 5055, 5065, 5075, 5085, 5095, 5105, 5115, 5125, 5135, 5145, 5155, 5165, 5175, 5185, 5195, 5205, 5215, 5225, 5235, 5245, 5255, 5265, 5275, 5285, 5295, 5305, 5315, 5325, 5335, 5345, 5355, 5855, 5870, 5885, 5900, 5975, 5990.

3. General communication channels (Other nations priority), provided that such use will not cause interference to services in other North American countries: 2206, 2212,

2218, 2224, 2230, 2236, 2242, 2248, 2254, 2260, 2266, 2272,
2278, 2284, 2290, 2296, 3010, 3016, 3022, 3028, 3034, 3040,
3046, 3052, 3058, 3196, 3202, 3208, 3214, 3220, 3226, 4004,
4212, 4220, 4228, 4324, 4332, 4340, 4348, 4356, 4455,
118 4465, 4475, 4485, 4495, 4505, 4515, 4805, 4815, 4825,
4835, 4845, 4855, 4865, 4875, 4885, 4895, 4905, 4915,
5375, 5385, 5395, 5405, 5415, 5425, 5435, 5445, 5455, 5465,
5475, 5485, 5495, 5705, 5720, 5735, 5750, 5765, 5780, 5795,
5810, 5825, 5840.

(*c*) Special Services.

1. Amateur: The band of frequencies between 1715 and 2000 kilocycles, inclusive, and the band of frequencies between 3504 and 4000 kilocycles, inclusive.

2. Experimental visual broadcasting: The frequencies 2000 to 2200 kilocycles inclusive and 2750 to 2950 kilocycles inclusive.

The frequencies 2200 to 2299 kilocycles inclusive, provided that such use will not interfere with radio services in other North American countries.

3. General experimental: 1604, 2398, 4795, (assigned to general experimental stations by all North American nations). 3256 (Shared between Canada and United States).

4. The following frequencies are to be assigned exclusively to stations devoted to promoting the interests of agriculture: 3250 (Shared between Canada and the United States). 4244, 5365 (United States exclusive channels).

5. The following frequencies are reserved for as-
119 signment to stations rendering emergency services:
3160, 3166, 3172, 3178, 3184 (Shared between United States and Newfoundland): 3238, 3244 (Shared between United States and Canada).

6. In order to preserve a uniform channeling system, the Commission urges upon Government services the desirability of operating upon the nearest standard channel, under the terms of General Order No. 62, to the frequency assigned it by the President, and for this purpose, considers Government services to be operating upon the following frequencies: 1692, 1696, 1700, (2010 to 2020 and 2240 to 2250 kilocycles shared with visual broadcasting), 2308, 2314, 2338, 2356, 2386, 2404, 2434, 2464, 2488, 2494, 2500, 2512, 2548,

2572, 2602, 2656, 2674, 2686, 2704, 2710, 2716, 2746, (2885, 2915, shared with visual broadcasting), 2956, 2962, 2968, 2974, 2980, 2986, 2992, 2998, 3004, *3034, 3064, 3094, 3154, 3190, 3232, 3262, 3292, 3340, 3348, 3356, 3364, 3372, 3380, 3388, 3396, 3404, 3412, 3444, 3476, 3500 to 4000, 4012, 4020, 4028, 4036, 4044, 4052, 4060, 4068, 4076, 4084, 4092, 4100, 4132, 4156, 4204, 4236, 4252, 4260, 4292, 4300, 4308, 4316, 4364, 4372, 4380, 4388, 4425, 4435, 4445, 4525, 5915, 5930, 5945, 5960.

120 *Paragraph* II. No license shall be granted to any applicant for a fixed station, coastal station, or aeronautical station, who is unable to satisfy the Commission that he can maintain the assigned station frequency with an accuracy of .05 per cent or better at all times.

Paragraph III. Licensees of fixed, coastal, or aeronautical stations shall obtain and use for tuning, and checking the tuning of their transmitters, suitable frequency-measuring equipment which shall be accurate within .025 per cent on the frequencies on which the transmitter is licensed to operate. The frequency-measuring equipment made available by the Department of Commerce shall be considered as standard for comparing and calibrating frequency-measuring equipment.

Paragraph IV. Licensees must use radio transmitters, the omissions of which, by reason of actual decrement, high-speed signaling modulation, spacing waves, harmonics, frequency modulation, key clicks, and mush, do not cause interference detrimental to traffic and programs being carried out on other authorized channels of communications.

FEDERAL RADIO COMMISSION,
(S.) By IRA E. ROBINSON,
Chairman.

***Shared between Canada and other nations. (See (b) 3, above.)**

121 2019.

Federal Radio Commission, Washington, D. C.

February 3, 1930.
Mar. 3, 1930

List of Licensed Broadcasting Stations by Frequencies.

D—Daytime. See General Order No. 41. LS—Power until local sunset. LT—Limited Time. See General Order No. 48. LP—Limited Power. See General Order No. 42.	Time and power limitations.

CP—Construction Permit authorized.
T—Where transmitter location differs from main studio, same is shown below main studio location.

Call letters.	Main studio location.	Owner.	Shares with	Power, watts.	Time & power limitations.
550 *Kilocycles:*					
WGR	Buffalo, N. Y. T-Amherst, N. Y.	Radio Station WGR, Inc.		1 KW	
WKRC	Cincinnati, Ohio	WKRC, Inc. C. P. to incr. pr. to 1 KW experimentally.		500	
KFUO	St. Louis, Mo. T-Clayton, Mo.	Evangelical Lutheran Synod of Missouri, Ohio & other states, Rev. R. Kretzschmar, Chairman Board of Control of Concordia Seminary	(KSD)	500 1 KW	 LS
KSD	St. Louis, Mo.	Pulitzer Publishing Co.	(KFUO)	500	
KFDY	Brookings, S. D.	South Dakota State College	(KFYR)	500 1 KW	 LS
KFYR	Bismarck, N. D.	Hoskins-Meyer	(KFDY)	500	
KOAC	Corvallis, Ore.	Oregon State Agri. College		1 KW	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
122 560 *Kilocycles:*					
WLIT	Philadelphia, Pa.	Lit Brothers	(WFI)	500	
WFI	Philadelphia, Pa.	Strawbridge & Clothier	(WLIT)	500	
WQAM	Miami, Fla.	Miami Brdcstg. Co.		1 KW	
KFDM	Beaumont, Texas	Magnolia Petroleum Co.		500	
				1 KW	LS
WNOX	Knoxville, Tenn.	Sterchi Brothers		1 KW	
				2 KW	LS
WIBO	Chicago, Ill.	Nelson Bros. Bond & Mortgage Co.	(WPCC, WEBW)	1 KW	
	T-Desplaines, Ill.			1½ KW	LS
WPCC	Chicago, Ill.	North Shore Cong. Church	(WIBO, WEBW)	500	
WEBW	Beloit, Wis.	Beloit College	(WIBO, WPCC)	500	
KLZ	Denver, Colo.	Reynolds Radio Co., Inc.		1 KW	
KTAB	Oakland, Calif.	Associated Broadcasters		1 KW	
570 *Kilocycles:*					
WNYC	New York, N. Y.	City of New York Dept. Plant & Structures	(WMCA)	500	
WMCA	New York City T-Hoboken, N. J.	Knickerbocker Brdcstg. Co., Inc.	(WNYC)	500	
WSYR	Syracuse, N. Y.	Clive B. Meredith	(WMAC)	250	
123					
WMAC	Cazenovia, N. Y.	Clive B. Meredith	(WSYR)	250	
WKBN	Youngstown, Ohio	W. P. Williamson, Jr.	(WEAO)	500	
WEAO	Columbus, Ohio	Ohio State University	(WKBN)	750	
WWNC	Asheville, N. C.	Citizen's Broadcasting Co. Inc.		1 KW	
KGKO	Wichita Falls, Tex.	Wichita Falls Brdcstg. Co.		250	
				500	LS
WNAX	Yankton, S. D.	Gurney Seed & Nursery Co.		1 KW	

KXA	Seattle, Wash.	American Radio Tel. Co.		500	
KMTR	Hollywood, Calif.	KMTR Radio Corp.		500	

580 *Kilocycles*—(Canadian Shared):

WTAG	Worcester, Mass.	Worcester Telegram Pub. Co., Inc.		250	
WOBU	Charleston, W. Va.	Charleston Radio Brdcstg. Co.	(WSAZ)	250	

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WSAZ	Huntington, W. Va.	WSAZ, Inc.	(WOBU)	250	
KGFX	Pierre, S. D.	Dana McNeil		200	D
WIBW	Topeka, Kans.	Topeka Brdcstg. Assn., Inc.	(KSAC)	500 1 KW	 LS
KSAC	Manhattan, Kans.	Kansas State Agri. College	(WIBW)	500 1 KW	 LS

590 *Kilocycles*:

WEEI	Boston, Mass. T-Weymouth, Mass.	Edison Elec. Illum. Co. of Boston		1 KW	
WEMC	Berrien Springs, Mich.	Emmanuel Missionary College		1 KW	D
WCAJ	Lincoln, Nebr.	Nebr. Wesleyan University	(WOW)	500	
WOW	Omaha, Nebr.	Woodman of the World Life Ins. Assn.	(WCAJ)	1 KW	
KHQ	Spokane, Wash.	Louis Wasmor, Inc. C. P. issued to incr. pr. to 2 KW LS.		1 KW	

600 *Kilocycles*—(Canadian Shared):

WCAC	Storrs, Conn.	Conn. Agri. College	(WGBS)	250	
WCAO	Baltimore, Md.	Monumental Radio, Inc.		250	

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WGBS	New York City T-Astoria, L. I., N. Y.	General Brdcstg. System, Inc.	(WCAC)	250 500	 LS (Exp.)
WREC	Memphis, Tenn. T-Whitehaven, Tenn.	WREC, Incorporated	(WOAN)	500 1 KW	
WOAN	Lawrenceburg, Tenn.	WREC, Inc.	(WREC)	500	
WMT	Waterloo, Iowa	Waterloo Broadcasting Co. (4/7 time)		500	
KFSD	San Diego, Cal.	Airfan Radio Corp. Ltd.		500 1 KW	 LS

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
610 *Kilocycles:*					
WJAY	Cleveland, Ohio	Cleveland Radio Brdcstg. Corp.		500	D
WFAN	Philadelphia, Pa.	Keystone Brdcstg. Co.	(WIP)	500	
WIP	Philadelphia, Pa.	Gimbel Bros., Inc.	(WFAN)	500	
WDAF	Kansas City, Mo.	Kansas City Star Co.		1 KW	
KFRC	San Francisco, Calif.	Don Lee, Inc.		1 KW	
620 *Kilocycles:*					
WLBZ	Bangor, Maine	Maine Broadcasting Co., Inc.		500	
WFLA-WSUN	Clearwater, Fla.	Clearwater Chamber of Commerce & St. Petersburg Chamber of Commerce		1 KW	
				2½ KW	LS
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WTMJ	Milwaukee, Wis. T-Brookfield, Wis.	The Journal Co. (Milwaukee Journal)		1 KW	
				2½ KW	LS
KGW	Portland, Ore.	Oregonian Publishing Co.		1 KW	
KTAR	Phœnix, Ariz.	KAR Broadcasting Co.		500	
				1 KW	LS
630 *Kilocycles*—(Canadian Shared):					
WMAL	Washington, D. C.	M. A. Leese		250	
				500	LS
WOS	Jefferson City, Mo.	Missouri State Mrktg. Bureau	(WGBF, KFRU)	500	
				1 KW	LS
KFRU	Columbia, Mo.	Stephens College	(WOS, WGBS)	500	
WGBF	Evansville, Ind.	Evansville on the Air, Inc.	(WOS, KFRU)	500	

640 *Kilocycles:*

WAIU	Columbus, Ohio	American Insurance Union	500	LT
WOI	Ames, Iowa	Iowa State College of Agri. & Mechanic Arts	5 KW	D
KFI	Los Angeles, Calif.	Earl C. Anthony, Inc.	5 KW	

650 *Kilocycles:*

WSM	Nashville, Tenn.	Nat'l Life & Acc. Ins. Co.	5 KW	

127 660 *Kilocycles:*

WEAF	New York City T-Bellmore, N. Y.	Nat'l Brdcstg. Co., Inc.	50 KW	LP
WAAW	Omaha, Neb.	Omaha Grain Exchange	500	D

670 *Kilocycles:*

WMAQ	Chicago, Ill. T-Addison, Ill.	Chicago Daily News, Inc.	5 KW	

680 *Kilocycles:*

WPTF	Raleigh, N. C.	Durham Life Ins. Co.	1 KW	LT
KFEQ	St. Joseph, Mo.	Scroggin & Co. Bank	2½ KW	D
KPO	San Francisco, Cal.	Hale Bros. Stores, Inc. & The Chronicle Publishing Co.	5 KW	

690 *Kilocycles*—(Canadian Exclusive):

700 *Kilocycles:*

WLW	Cincinnati, Ohio T-Mason, Ohio.	Crosley Radio Corp.	50 KW	LP

710 *Kilocycles:*

WOR	Newark, N. J. T-Kearny, N. J.	L. Bamberger & Co.	5 KW	
KEJK	Beverly Hills, Calif.	R. S. MacMillan	500	LT

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
128 720 *Kilocycles:*					
WGN-WLIB	Chicago, Ill. T-Elgin, Ill.	The Tribune Co		25 KW	
730 *Kilocycles*—(Canadian Exclusive):					
740 *Kilocycles:*					
WSB	Atlanta, Ga.	Atlanta Journal Co		5 KW	
KMMJ	Clay Center, Neb	The M. M. Johnson Co		1 KW	LT
750 *Kilocycles:*					
WJR	Detroit, Mich. T-Sylvan Lake Village, Mich.	WJR, The Goodwill Station, Inc		5 KW	
760 *Kilocycles:*					
WJZ	New York, N. Y. T-Boundbrook, N. J.	Radio Corp. of America		30 KW	LP
WEW	St. Louis, Mo	St. Louis University		1 KW	D
KVI	Tacoma, Wash. T-Des Moines, Wash.	Puget Sound Broadcasting Co., Inc		1 KW	LT
770 *Kilocycles:*					
KFAB	Lincoln, Nebr.	Nebraska Buick Automobile Co	(WBBM-WJBT)	5 KW	
WBBM-WJBT	Chicago, Ill. T-Glenview, Ill.	The Atlass Co., Inc	(KFAB)	25 KW	

129 780 *Kilocycles*—(Canadian Shared):

WEAN	Providence, R. I.	The Shepard Company	250 500	LS
WTAR-WPOR	Norfolk, Va.	WTAR Radio Corp. (½ time)	500	
WMC	Memphis, Tenn.	Memphis Comm. Appeal, Inc. (C. P. issued to move to Bartlett, Tenn.)	500 1 KW	LS
KELW	Burbank, Calif.	Earl L. White (KTM)	500	
KTM	Los Angeles, Calif. T-Santa Monica, Calif.	Pickwick Brdcstg. Corp. (KELW)	500 1 KW	LS

790 *Kilocycles:*

WGY	Schenectady, N. Y. T-So. Schenectady, N. Y.	General Electric Co.	50 KW	
KGO	Oakland, Calif.	General Electric Co.	7½ KW	

800 *Kilocycles:*

WBAP	Ft. Worth, Tex. T-Grapevine, Tex.	Carter Publications, Inc. (WFAA) (Licensed at present for 5 KW only.)	50 KW	LP
WFAA	Dallas, Tex. T-Grapevine, Texas.	Dallas News & Dallas Journal (A. H. Belo Corp.) (WBAP) (C. P. issued to incr. pr. to 50 KW-LP.)	5 KW	

810 *Kilocycles:*

WPCH	New York, N. Y. T-Hoboken, N. J.	Eastern Broadcasters, Inc.	500	D

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WCCO	Minneapolis, Minn. T-Anoka, Minn.	Northwestern Broadcasting, Inc.	7½ KW	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
820 *Kilocycles:*					
WHAS	Louisville, Kentucky T-Jeffersontown, Kentucky, The Louisville Times Co.	The Courier Journal Co.		10 KW	
830 *Kilocycles:*					
WHDH	So. Boston, Mass. T-Gloucester, Mass.	Matheson Radio Co., Inc.		1 KW	D
WRUF	Gainesville, Fla.	University of Fla.		5 KW	LT
KOA	Denver, Colo.	General Electric Co.		12½ KW	
840 *Kilocycles*—(Canadian Exclusive):					
850 *Kilocycles:*					
KWKH	Kennonwood, La.	W. K. Henderson	(WWL)	10 KW	
WWL	New Orleans, La.	Loyola University	(KWKH)	5 KW	
860 *Kilocycles:*					
WABC-WBOQ	New York City T-West of Cross Bay Blvd., Queens Co.	Atlantic Brdcstg. Corp.		5 KW	
		C. P. issued to move & incr. pr. to 50 KW-LP			
WHB	Kansas City, Mo.	WHB Brdcstg. Co.		500	D
KFQZ	Los Angeles, Calif. T-Hollywood, Calif.	Taft Radio & Brdcstg. Co., Inc.		250	LT

KMO	Tacoma, Wash.	KMO, Inc.		500 1 KW	LT LS

870 *Kilocycles:*

WLS	Chicago, Ill. T-Crete, Ill.	Agricultural Brdcstg. Co. C. P. issued to incr. pr. to 50 KW-LP	(WENR-WBCN)	5 KW	
WENR-WBCN	Chicago, Ill. T-Downers Grove, Ill.	Great Lakes Brdcstg. Co.	(WLS)	50 KW	LP

880 *Kilocycles*—(Canadian Shared):

WGBI	Scranton, Pa.	Scranton Broadcasters, Inc.	(WQAN)	250	
WQAN	Scranton, Pa.	E. J. Lynett, Prop., The Scranton Times	(WGBI)	250	
WSUI	Iowa City, Iowa	State University of Iowa	(3/7 time)	500	
KLX	Oakland, Calif.	The Tribune Pub. Co.		500	
KPOF	Denver, Colo.	Pillar of Fire, Inc.	(KFKA)	500	
KFKA	Greeley, Colo.	Colo. State Teachers College	(KPOF)	500 1 KW	 LS

890 *Kilocycles*—(Canadian Shared):

WJAR	Providence, R. I.	The Outlet Co.		250 400	 LS
WKAQ	San Juan, P. R.	Radio Corp. of Porto Rico		500	
WMMN	Fairmont, W. Va.	Holt-Rowe Novelty Co.		250 500	 LS
WMAZ	Macon, Ga.	Macon Junior Chamber of Commerce	(WGST)	250 500	 LS

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
132					
890 *Kilocycles*—(Canadian Shared)—Continued:					
WGST	Atlanta, Ga.	Georgia Sch. of Technology	(WMAZ)	250	
KGJF	Little Rock, Ark.	First Church of the Nazarene		250	
WILL	Urbana, Ill.	University of Illinois	(KUSD, KFNF)	250	
				500	LS
KUSD	Vermillion, S. D.	University of S. Dak.	(WILL, KFNF)	500	
				750	LS
KFNF	Shenandoah, Iowa	Henry Field Seed Co.	(WILL, KUSD)	500	
				1 KW	LS
900 *Kilocycles:*					
WFBL	Syracuse, N. Y.	The Onondaga Co.	(WMAK)	750	
		(Also authorized to operate full time on 1490 kc.-1 KW)			
WMAK	Buffalo, N. Y. T-Martinsville, N. Y.	WMAK Brdcstg. System, Inc.	(WFBL)	750	
WRDA	Buffalo, N. Y. T-Orchard Park, N. Y.	Edward H. Butler & Ada Butler Mitchell d/b as Buffalo Evening News (C. P. only)		1 KW	
WKY	Oklahoma City, Okla.	WKY Radiophone Company		1 KW	
WJAX	Jacksonville, Fla.	City of Jacksonville		1 KW	
WLBL	Stevens Point, Wis.	State of Wisconsin, Wis. Dept. of Agriculture & Markets		2 KW	D
KHJ	Los Angeles, Calif.	Don Lee, Inc.		1 KW	
KSEI	Pocatello, Idaho	KSEI Brdcstg. Assn. Inc.		250	
KGBU	Ketchikan, Alaska	Alaska Radio & Service Co., Inc.		500	
133 910 *Kilocycles*—(Canadian Exclusive):					
920 *Kilocycles:*					
WBSO	Wellesley Hills, Mass.	Babson's Statistical Org., Inc.		250	D
		(C. P. issued to move to Needham, Mass. & incr. pr. to 500 W.)			

WWJ	Detroit, Mich	The Evening News Assn	1 KW	
KPRC	Houston, Texas	Houston Printing Co	1 KW	
	T-Sugarland, Texas.		2½ KW	LS
WAAF	Chicago, Ill	Drovers Journal Pub. Co	500	D
KOMO	Seattle, Wash	Fisher's Blend Station, Inc	1 KW	
KFEL	Denver, Colo	Eugene P. O'Fallon, Inc (KFXF)	500	
KFXF	Denver, Colo	Colorado Radio Corp (KFEL)	500	

930 *Kilocycles*—(Canadian Shared):

WIBG	Elkins Park, Pa	St. Paul's P. E. Church	50	D
WDBJ	Roanoke, Va	Richardson-Wayland Electrical Corp	250	LS
			500	
WBRC	Birmingham, Ala	Birmingham Brdcstg. Co., Inc	500	
134			1 KW	LS
KGBZ	York, Nebr	Dr. Geo. R. Miller (KMA)	500	
			1 KW	LS
KMA	Shenandoah, Ia	May Seed & Nursery Co (KGBZ)	500	
			1 KW	LS
KFWI	San Francisco, Cal	Radio Entertainments, Inc (KFWM)	500	
KFWM	Oakland, Calif	Educational Broadcasting Corp (KFWI)	500	
	T-Richmond, Calif.		1 KW	LS

940 *Kilocycles:*

WCSH	Portland, Maine	Congress Square Hotel Co	500	
		C. P. to move to Scarboro and increase power to 1 KW.		
WFIW	Hopkinsville, Ky	The Acme Mills, Inc	1 KW	
WHA	Madison, Wis	University of Wisconsin	750	D
WDAY	W. Fargo, N. D	WDAY, Incorporated	1 KW	
KOIN	Portland, Ore	KOIN, Incorporated	1 KW	
	T-Sylvan, Ore.			
KGU	Honolulu, T. H	Marion A. Mulrony & Advertising Publishing Co., Ltd	1 KW	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
950 ***Kilocycles:***					
WRC	Washington, D. C	Radio Corporation of America		500	
KMBC	Kansas City, Mo T-Independence, Mo.	Midland Brdcstg. Co., Inc		1 KW	
KFWB	Hollywood, Calif	Warner Bros. Brdcstg. Corp		1 KW	
KGHL	Billings, Mont	Northwestern Auto Supply Co., Inc		500	
135 960 *Kilocycles*—(Canadian Exclusive):					
970 ***Kilocycles:***					
WCFL	Chicago, Ill	Chicago Federation of Labor		1½ KW	LT
KJR	Seattle, Wash	Northwest Brdcstg. System, Inc		5 KW	
980 ***Kilocycles:***					
KDKA	Pittsburgh, Pa T-Wilkins Twp., Pa.	Westinghouse Elec. & Mfg. Co C. P. issued to move near Saxonburg, Pa.		50 KW	LP
990 ***Kilocycles:***					
WBZ	Springfield, Mass T-E. Springfield, Mass.	Westinghouse Elec. & Mfg. Co	(WBZA)	15 KW	
WBZA	Boston, Mass	Westinghouse Elec. & Mfg. Co	(WBZ)	500	
1000 *Kilocycles:*					
WHO	Des Moines, Ia	Central Broadcasting Co	(WOC)	5 KW	
WOC	Davenport, Ia	Central Broadcasting Co	(WHO)	5 KW	
KFVD	Culver City, Calif	Los Angeles Brdcstg. Co		250	LT

1010 *Kilocycles*—(Canadian Shared):

WQAO-WPAP	New York, N. Y. T-Cliffside, N. J.	Calvary Baptist Church	(WHN, WRNY)	250	
WHN	New York, N. Y.	Marcus Loew Booking Agency	(WQAO-WPAP, WRNY)	250	
WRNY	New York, N. Y. T-Coteysville, N. J.	Aviation Radio Station, Inc.	(WQAO-WPAP, WHN)	250	
KGGF	Picher, Okla	D. L. Connell, M. D.	(WNAD)	500	

WNAD	Norman, Okla	University of Oklahoma	(KGGF)	500	
WIS	Columbia, S. C.	George T. Barnes, Inc.		500	
			(C. P. only)	1 KW	LS
KQW	San Jose. Calif	First Baptist Church		500	

1020 *Kilocycles:*

WRAX	Philadelphia, Pa	Berachah Church, Inc.		250	D
KYW-KFKX	Chicago, Ill T-Bloomingdale Twp. Ill.	Westinghouse Elec. & Mfg. Co		10 KW	

1030 *Kilocycles*—(Canadian Exclusive):

1040 *Kilocycles:*

WKEN	Buffalo, N. Y. T-Grand Island, N. Y.	Radio Station WKEN, Inc		1 KW	LT
WKAR	East Lansing, Mich	Michigan State College		1 KW	D
KTHS	Hot Springs National Park, Ark	Hot Springs Chamber of Commerce	(KRLD)	10 KW	
KRLD	Dallas, Tex	KRLD Radio Corp	(KTHS)	10 KW	

1050 *Kilocycles:*

KFKB	Milford, Kansas	The KFKB Brdcstg. Assn., Inc		5 KW	LT
KNX	Hollywood, Calif T-Los Angeles, Calif.	Western Broadcast Co		5 KW	

(C. P. issued to increase power to 50 KW-LP.)

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1060 *Kilocycles:*					
WBAL	Baltimore, Md T-Glen Morris, Md.	Cons. Gas Elec. Lt. & Power Co. of Baltimore	(WTIC)	10 KW	
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WTIC	Hartford, Conn T-Avon, Conn.	Travelers Brdcstg. Service Corp	(WBAL)	50 KW	LP
WJAG	Norfolk, Nebr	Norfolk Daily News		1 KW	LT
KWJJ	Portland, Ore	KWJJ Broadcast Co., Inc		500	LT
1070 *Kilocycles:*					
WAAT	Jersey City, N. J	Bremer Broadcasting Corp		300	day until 6 P. M. but not after sunset at Cleveland, O.
WTAM	Cleveland, Ohio T-Brecksville Village, O.	WTAM & WEAR, Inc		50 KW	LP
WCAZ	Carthage, Ill	Carthage College		50	D
WDZ	Tuscola, Ill	James L. Bush		100	D
KJBS	San Francisco, Calif	Julius Brunton & Sons Co		100	D
1080 *Kilocycles:*					
WBT	Charlotte, N. C	Station WBT, Inc		5 KW	
WCBD	Zion, Ill	Wilbur Glenn Voliva	(WMBI)	5 KW	LT
WMBI	Chicago, Ill T-Addison, Ill.	The Moody Bible Inst. Radio Station	(WCBD)	5 KW	LT

1090 *Kilocycles:*

KMOX-KFQA	St. Louis, Mo. T-Kirkwood, Mo.	Voice of St. Louis, Inc. (C. P. issued to move & incr. pr. to 50 KW-LP.)		5 KW	

1100 *Kilocycles:*

WPG	Atlantic City, N. J.	Municipality of Atlantic City	(WLWL)	5 KW	
WLWL	New York City T-Kearny, N. J.	Missionary Society of St. Paul the Apostle	(WPG)	5 KW (6 P. M. to 8 P. M.)	
KGDM	Stockton, Calif.	E. F. Peffer (C. P. to incr. pwr. to 250 W-D.)		50	D

138 1110 *Kilocycles:*

WRVA	Richmond, Va. T-Mechanicsville, Va.	Larus & Bro. Co., Inc.		5 KW	
KSOO	Sioux Falls, S. D.	Sioux Falls Broadcast Assn., Inc.		2 KW	LT

1120 *Kilocycles*—(Canadian Shared):

WDEL	Wilmington, Del.	WDEL, Inc.		250 350	 LS
WDBO	Orlando, Fla.	Orlando Brdcstg. Co., Inc.		500 1 KW	(½ time) LS
WTAW	College Station, Tex.	Agri. & Mech. College of Texas	(KTRH)	500	
KTRH (formerly KUT)	Austin, Texas	Rice Hotel (C. P. only) (C. P. to move to Houston)	(WTAW)	500	
WISN	Milwaukee, Wis.	Evening Wisconsin Co.	(WHAD)	250	
WHAD	Milwaukee, Wis.	Marquette University	(WISN)	250	
KFSG	Los Angeles, Calif.	Echo Park Evang. Assn.	(KMIC)	500	
KRSC	Seattle, Wash.	Radio Sales Corp.		50	D
KMIC	Inglewood, Calif.	Dalton's Inc.	(KFSG)	500	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1130 *Kilocycles:*					
WOV	New York City T-Secaucus, N. J.	International Brdcstg. Corp.		1 KW	Daytime to 6 P. M.
WJJD	Mooseheart, Ill.	Supreme Lodge of the World, Loyal Order of Moose		20 KW	LT
KSL	Salt Lake City, Utah	Radio Service Corp. of Utah		5 KW	
139 1140 *Kilocycles:*					
WAPI	Birmingham, Ala.	Alabama Polytechnic Inst., University of Alabama & Alabama College	(KVOO)	5 KW	
KVOO	Tulsa, Okla.	Southwestern Sales Corp.	(WAPI)	5 KW	
1150 *Kilocycles:*					
WHAM	Rochester, N. Y. T-Victor Township	Stromberg-Carlson Tel. Mfg. Co.		5 KW	
1160 *Kilocycles:*					
WWVA	Wheeling, W. Va.	West Virginia Brdcstg. Corp.	(WOWO)	5 KW	
WOWO	Ft. Wayne, Ind.	Main Auto Supply Co.	(WWVA)	10 KW	
1170 *Kilocycles:*					
WCAU	Philadelphia, Pa. T-Byberry, Pa.	Universal Brdcstg. Co.		10 KW	
KTNT	Muscatine, Iowa	Norman Baker		5 KW	LT
1180 *Kilocycles:*					
WDGY	Minneapolis, Minn.	Dr. Geo. W. Young	(WHDI)	1 KW	LT

WHDI	Minneapolis, Minn.	William Hood Dunwoody Industrial Inst.	(WDGY)	500	LT
KEX	Portland, Ore.	Western Brdcstg. Co.	(KOB)	5 KW	
KOB	State College, N. M.	N. M. College of Agri. & Mech. Arts.	(KEX)	20 KW	

140 1190 *Kilocycles:*

WICC	Bridgeport, Conn. T-Easton, Conn.	Bridgeport Brdcstg. Station, Inc.		500	D
WOAI	San Antonio, Tex.	Southern Equipment Co. C. P. issued to increase power to 50 KW-LP		5 KW	

1200 *Kilocycles*—(Canadian Shared):

WABI	Bangor, Maine	First Universalist Church of Bangor, Maine		100	
WNBX	Springfield, Vt.	First Cong. Church Corp.	(WCAX)	10	
WCAX	Burlington, Vt.	University of Vermont	(WNBX)	100	
WORC	Worcester, Mass. T-Auburn, Mass.	Albert Frank Kleindienst		100	(½ time)
WIBX	Utica, N. Y.	WIBX, Inc.		100 300	 LS
WFBE	Cincinnati, Ohio	George M. Schott, Louis Schott, Wm. C. Schott, & Peter W. Miller d/b as Parkview Hotel		100	
WHBC	Canton, Ohio	St. John's Catholic Church (Sundays)	(WNBO)	10	
WLAP	Louisville, Ky.	American Brdcstg. Corp. of Kentucky		30	
WLBG	Petersburg, Va. Ettrick, Va.	Robert Allen Gamble		100 250	 LS
WNBO	Washington, Pa.	John Brownlee Spriggs (Sundays)	(WHBC)	100	

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WCOD	Harrisburg, Pa.	Norman R. Hoffman	(WKJC)	100	
WKJC	Lancaster, Pa.	Kirk Johnson & Co.	(WCOD)	100	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1200 *Kilocycles*—(Canadian Shared)—Continued:					
WNBW	Carbondale, Pa.	G. F. Schiessler & M. E. Stephens, d/b as Home Cut Glass & China Co.		10	
WABZ	New Orleans, La.	Coliseum Place Baptist Church	(WJBW)	100	
WJBW	New Orleans, La.	C. Carlson	(WABZ)	30	
WBBY	Charleston, S. C.	Washington Light Infantry		75	
WBBZ	Ponca City, Okla.	C. L. Carrell		100	
WFBC	Knoxville, Tenn.	First Baptist Church		50	
WRBL	Columbus, Ga.	David Parmer		50	
KBTM	Paragould, Ark.	W. J. Beard (W. J. Beard's Temple of Music)	(C. P. only)	100	D
WJBC	La Salle, Ill.	Hummer Furniture Co.	(WJBL)	100	
WJBL	Decatur, Ill.	Commodore Brdcstg., Inc.	(WJBC)	100	
WWAE	Hammond, Ind.	Hammond-Calumet Brdcstg. Corp.	(WRAF)	100	
WRAF	La Porte, Ind.	The Radio Club, Inc.	(WWAE)	100	
KFJB	Marshalltown, Ia.	Marshall Electric Co., Inc.		100	(½ time)
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KGCU	Mandan, N. D.	Mandan Radio Association		100	
WCAT	Rapid City, S. D.	S. D. State School of Mines		100	
KGDY	Oldham, S. D.	J. Albert Loesch & Geo. W. Wright		15	
KFWF	St. Louis, Mo.	St. Louis Truth Center, Inc.	(WMAY, WIL)	100	
KGDE	Fergus Falls, Minn.	C. L. Jaren (Jaren Drug Co.) C. P. to increase power to 100 watts—250 watts LS—experimentally		50	
KGFK	Hallock, Minn.	R. W. Lautzenheiser & O. R. Mitchell d/b as Lautzenheiser & Mitchell		50	
WCLO	Kenosha, Wis.	C. E. Whitmore		100	
WHBY	Green Bay, Wis. T-West De Pere, Wis.	St. Norbert College		100	

WIL	St. Louis, Mo.	Missouri Brdcstg. Corp.	(KFWF, WMAY)	100	
				250	LS
WMAY	St. Louis, Mo.	Kingshighway Pres. Ch.	(KFWF, WIL)	100	
				250	LS
KGFJ	Los Angeles, Calif.	Ben S. McGlashan		100	
KXO	El Centro, Calif.	E. R. Irey & F. M. Bowles		100	
KSMR	Santa Maria, Calif.	Santa Maria Valley R. R. Co.		100	
KWG	Stockton, Calif.	Portable Wireless Tel. Co., Inc.		100	
KGEK	Yuma, Colo.	Elmer G. Beehler, trading as Beehler Electrical Equip. Co.	(KGEW)	50	
KGEW	Ft. Morgan, Colo.	City of Ft. Morgan	(KGEK)	100	

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KFHA	Gunnison, Colo.	Western State College of Colo.		50	
KVOS	Bellingham, Wash.	KVOS, Inc.		100	
KGY	Lacey, Wash.	Saint Martin's College		10	
				50	LS

1210 *Kilocycles*—(Canadian Shared):

WJBI	Redbank, N. J.	Robert S. Johnson	(WCOH, WGBB)	100
WGBB	Freeport, N. Y.	Harry H. Carman	(WCOH, WJBI)	100
WCOH	Yonkers, N. Y. T-Greenville, N. Y.	Westchester Brdcstg. Corp.	(WJBI, WGBB)	100
WOCL	Jamestown, N. Y.	A. E. Newton		25
WLCI	Ithaca, N. Y.	Lutheran Assn. of Ithaca, New York		50
WPAW	Pawtucket, R. I.	Shartenberg & Robinson Company	(WDWF, WLSI)	100
WDWF-WLSI	Providence, R. I. T-Cranston	Dutee Wilcox Flint & Lincoln Studios, Inc.	(WPAW)	100
WMAN	Columbus, Ohio	W. E. Heskett		50
WJW	Mansfield, Ohio	John F. Weimer (owner Mansfield Brdcstg. Assn.)		100
WEBE	Cambridge, Ohio	Roy W. Waller		100
WBAX	Wilkes-Barre, Pa.	John H. Stenger, Jr. C. P. issued to move to Plains Twp.	(WJBU)	100

List of Licensed Broadcasting Stations by Frequencies—Continued.

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Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1210 *Kilocycles*—(Canadian Shared)—Continued:					
WJBU	Lewisburg, Pa	Bucknell University	(WBAX)	100	
WMBG	Richmond, Va	Havens & Martin, Inc		100	
WSIX	Springfield, Tenn	Jack M. & Lewis R. Draughon, d/b as 638 Tire & Vulcanizing Co		100	
WRBU	Gastonia, N. C	A. J. Kirby Music Co. (A. J. Kirby, owner)		100	
WJBY	Gadsden, Ala	Gadsden Brdcstg. Co., Inc		50	
KGMP	Elk City, Okla	Homer F. Bryant, trading as Bryant Radio & Elec. Co	(C. P. only)	100	
WRBQ	Greenville, Miss	J. Pat Scully		100	
WGCM	Gulfport, Miss	Great Southern Land Co		100	
KWEA	Shreveport, La	William E. Antony		100	
KDLR	Devils Lake, N. D	Bert Wick & Harold Scrumgard (Radio Electric Co.)		100	
KGCR	Watertown, S. D	Cutler's Radio Brdcstg. Service, Inc		100	
KFOR	Lincoln, Nebr	Howard A. Shuman		100	
				250	LS
WHBU	Anderson, Ind	Citizens Bank		100	
KFVS	Cape Girardeau, Mo	Oscar C. Hirsch, tr. as Hirsch Battery & Radio Co	(WEBQ)	100	
WEBQ	Harrisburg, Ill	First Trust & Savings Bank of Harrisburg	(KFVS)	100	

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Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
WSBC	Chicago, Ill	World Battery Co., Inc	(WEDC, WCRW)	100	
WCRW	Chicago, Ill	Clinton R. White	(WEDC, WSBC)	100	
WEDC	Chicago, Ill	Emil Denemark, Inc	(WSBC, WCRW)	100	
WCBS	Springfield, Ill	Chas. Messter & H. L. Dowing	(WTAX)	100	
WTAX	Streator, Ill	Williams Hardware Co	(WCBS)	50	

WHBF	Rock Island, Ill	Beardsley Specialty Co		100	
WIBA	Madison, Wis	The Capital Times Company		100	
WOMT	Manitowoc, Wis	Francis M. Kadow		100	
KMJ	Fresno, Calif	James McClatchy Co		100	
KFXM	San Bernardino, Calif	J. C. & E. W. Lee (Lee Bros. Brdcstg. Co.)	(KPPC)	100	
KPQ	Wenatchee, Wash	Wescoast Brdcstg. Co	(KPCB)	50	
KPCB	Seattle, Wash	Wescoast Brdcstg. Co	(KPQ)	100	
KDFN	Casper, Wyo	Donald Lewis Hathaway		100	
KPPC	Pasadena, Calif	Pasadena Pres. Church	(KFXM)	50	

1220 *Kilocycles:*

WCAD	Canton, N. Y	St. Lawrence University		500	D

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WDAE	Tampa, Fla	Tampa Publishing Co		1 KW	
WCAE	Pittsburgh, Pa	Kaufman and Baer Co		1 KW	
WREN	Lawrence, Kans	Jenny Wren Co	(KFKU)	1 KW	
KFKU	Lawrence, Kans	University of Kansas	(WREN)	1 KW	
KWSC	Pullman, Wash	State College of Wash C. P. to incr. pr. to 1 KW-2 KW LS.		500	

1230 *Kilocycles:*

WNAC-WBIS	Boston, Mass T-Quincy, Mass.	Shepard Norwell Co. (Trade name—The Shepard Stores)		1 KW	
WPSC	State College, Pa	The Penna. State College		500	D
WSBT	South Bend, Ind	South Bend Tribune	(WFBM)	500	
WFBM	Indianapolis, Ind	Indianapolis Power & Light Co	(WSBT)	1 KW	
KFIO	Spokane, Wash	Spokane Brdcstg. Corp		100	D
KGGM	Albuquerque, N. M	New Mexico Brdcstg. Co		250 500	 LS
KYA	San Francisco, Cal	Pacific Brdcstg. Corp		1 KW	
KFQD	Anchorage, Alaska	Anchorage Radio Club		100	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1240 *Kilocycles:*					
WGHP	Detroit, Mich	American Brdcstg. Corp. of Ohio		1 KW	
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KSAT	Fort Worth, Texas T-Birdville, Texas Co.	Texas Air Transport Broadcast Co.	(WJAD)	1 KW	
WJAD	Waco, Texas	Frank P. Jackson	(KSAT)	1 KW	
1250 *Kilocycles:*					
WGCP	Newark, N. J.	May Radio Broadcast Corp.	(WODA, WAAM)	250	
WODA	Paterson, N. J.	Richard E. O'Dea	(WGCP, WAAM)	1 KW	
WAAM	Newark, N. J.	WAAM, Inc.	(WODA, WGCP)	1 KW 2 KW	 LS
WDSU	New Orleans, La.	Joseph H. Uhalt		1 KW	
WLB-WGMS	Minneapolis, Minn.	University of Minn. C. P. to move locally and increase power to 1 KW.	(WRHM, KFMX, WCAL).	500	
WRHM	Minneapolis, Minn. T-Fridley, Minn.	Minnesota Brdcstg. Corp.	(WLB, KFMX, WCAL)	1 KW	
KFMX	Northfield, Minn.	Carleton College	(WLB, WRHM, WCAL).	1 KW	
WCAL	Northfield, Minn.	St. Olaf College	(WLB, WRHM, KFMX).	1 KW	
KFOX	Long Beach, Calif.	Nichols & Warinner, Inc.		1 KW	
KIDO	Boise, Idaho	Frank L. Hill & C. G. Phillips, d/b as Boise Broadcast Station		1 KW	
1260 *Kilocycles:*					
WLBW	Oil City, Pa.	Radio-Wire Program Corp. of America		500 1 KW	 LS
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KWWG	Brownsville, Texas	Chamber of Commerce, City of Brownsville	(KRGV)	500	
WTOC	Savannah, Ga.	Savannah Brdcstg. Co., Inc.		500	

KRGV	Harlingen, Texas	Valley Radio-Electric Corp.	(KWWG)	500	
KOIL	Council Bluffs, Ia.	Mona Motor Oil Co.		1 KW	
KVOA	Tucson, Arizona	Robert M. Riculfi		500	D

1270 *Kilocycles:*

WEAI	Ithaca, N. Y.	Cornell University		500	D
WFBR	Baltimore, Md.	Baltimore Radio Show, Inc.		250	
WASH	Grand Rapids, Mich.	WASH Brdcstg. Corp.	(WOOD)	500	
WOOD	Grand Rapids, Mich. T-Furnwood, Mich.	Walter B. Stiles, Inc.	(WASH)	500	
WJDX	Jackson, Miss.	Lamar Life Ins. Co.		500	
				1 KW	LS
KWLC	Decorah, Iowa	Luther College	(KGCA)	100	D
KGCA	Decorah, Iowa	Chas. W. Greenley	(KWLC)	50	D
KTW	Seattle, Wash.	First Pres. Church	(KOL)	1 KW	
KOL	Seattle, Wash.	Seattle Brdcstg. Co., Inc.	(KTW)	1 KW	

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KFUM	Colorado Springs, Colo.	W. D. Corley		1 KW	

1280 *Kilocycles:*

WCAM	Camden, N. J.	City of Camden	(WOAX, WCAP)	500	
WCAP	Asbury Park, N. J.	Radio Industries Brdcstg. Co.	(WCAM, WOAX)	500	
WOAX	Trenton, N. J.	Franklyn J. Wolff	(WCAM, WCAP)	500	
WDOD	Chattanooga, Tenn.	Chattanooga Radio Co., Inc.		1 KW	
				2½ KW	LS
WRR	Dallas, Tex.	City of Dallas, Texas		500	

1290 *Kilocycles:*

WNBZ	Saranac Lake, N. Y.	Earl J. Smith & William Mace, d/b as Smith & Mace		50	D
WJAS	Pittsburgh, Pa. T-North Fayette Twp. Pa.	Pittsburgh Radio Supply House		1 KW	

List of Licensed Broadcasting Stations by Frequencies—Continued.

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Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1290 *Kilocycles*—Continued:					
KTSA	San Antonio, Texas	Lone Star Brdcst. Co., Inc	(KFUL)	1 KW 2 KW	 LS
KFUL	Galveston, Texas	Will H. Ford	(KTSA)	500	
KLCN	Blytheville, Ark	Charles Leo Lintzenich		50	D
WEBC	Superior, Wis	Head of the Lakes Brdcstg. Co (C. P. to incr. pr. to 2½ KW LS.)		1 KW	
KDYL	Salt Lake City, Utah	Intermountain Brdcstg. Corp		1 KW	
1300 *Kilocycles:*					
WBBR	Rossville, N. Y (Staten Island.)	Peoples Pulpit Assn	(WHAP, WEVD, WHAZ)	1 KW	
WHAP	New York, N. Y T-Carlstadt, N. J.	Defenders of Truth Society, Inc	(WBBR, WEVD, WHAZ)	1 KW	
WEVD	New York, N. Y T-Forest Hills, N. Y.	Debs Memorial Radio Fund, Inc	(WBBR, WHAP, WHAZ)	500	
WHAZ	Troy, N. Y	Rensselaer Poly. Inst	(WBBR, WHAP, WEVD)	500	
WIOD-WMBF	Miami Beach, Fla	Webb Jay & Jesse H. Jay d/b as Isle of Dreams Brdcstg. Co		1 KW	
KFH	Wichita, Kansas	Radio Station KFH Co	(WOQ)	1 KW	
WOQ	Kansas City, Mo	Unity School of Christianity	(KFH)	1 KW	

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Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
KGEF	Los Angeles, Calif	Trinity Methodist Church So	(KTBI)	1 KW	
KTBI	Los Angeles, Calif	Bible Inst. of Los Angeles	(KGEF)	750	
KFJR	Portland, Oregon	Ashley C. Dixon, tr. as Ashley C. Dixon & Son	(KTBR)	500	
KTBR	Portland, Oregon	M. E. Brown	(KFJR)	500	

1310 *Kilocycles:*

WKAV	Laconia, N. H	Laconia Radio Club		100	
WEBR	Buffalo, N. Y	Howell Broadcasting Co., Inc		100	
				200	LS.
WNBH	New Bedford, Mass	Irving Vermilya, Tr. as New Bedford Brdcstg. Co		100	
WOL	Washington, D. C	American Brdcstg Co		100	
WGH	Newport News, Va	Virginia Brdcstg. Co., Inc		100	
WRK	Hamilton, Ohio	S. W. Doron & John C. Slade d/b as Hamilton Radio Service		100	
WAGM	Royal Oak, Mich	Robert L. Miller		50	(½ time)
WFDF	Flint, Michigan	Frank D. Fallain		100	
WHAT	Philadelphia, Pa	Albert A. Walker	(WFKD)	100	
WFKD	Philadelphia, Pa	Foulkrod Radio Eng. Co	(WHAT)	50	
WJAC	Johnstown, Pa	Johnstown Auto Co	(WFBG)	100	

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WFBG	Altoona, Pa	William F. Gable Co	(WJAC)	100	
WRAW	Reading, Pa	Horace D. Good trading as Avenue Radio & Electric Shop	(WGAL)	100	
WGAL	Lancaster, Pa	WGAL, Incorporated	(WRAW)	15	
WSAJ	Grove City, Pa	Grove City College		100	
WBRE	Wilkes-Barre, Pa	Louis G. Baltimore		100	
WKBC	Birmingham, Ala	R. B. Broyles, trading as R. B. Broyles Furniture Co		100	
WRBI	Tifton, Ga	Chas. A. & Milton U. Kent, d/b as Kent's Furn. & Music Store		20	(½ time)
WOBT	Union City, Tenn	A. F. Tittsworth, trading as Tittsworth's Radio & Music Shop		100	
				250	LS.
WNBJ	Knoxville, Tenn	Lonsdale Baptist Church		50	
KRMD	Shreveport, La	Robert M. Dean	(KTSL)	50	
KTSL	Shreveport, La T-Cedar Grove, La.	Houseman Sheet Metal Works, Inc	(KRMD)	100	
WSJS	Winston-Salem, N. C	Winston-Salem Journal Co	(C. P. Only)	100	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1310 *Kilocycles*—Continued:					
WCSC	Charleston, S. C.	Fred Jordan & Lewis Burk	(C. P. Only)	100 250	 LS.
KFPM	Greenville, Texas	Dave Ablowich, trading as The New Furniture Co.		15	
KTSM	El Paso, Texas	W. S. Bledsoe & W. T. Blackwell	(WDAH)	100	
WDAH	El Paso, Texas	Trinity Methodist Church	(KTSM)	100	
KFPL	Dublin, Texas	C. C. Baxter		100	
KFXR	Oklahoma City, Okla	Exchange Avenue Baptist Church		100 250	 LS.
WKBS	Galesburg, Ill	Permil N. Nelson		100	
WCLS	Joliet, Ill	WCLS, Inc	(WKBB)	100	
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WKBB	Joliet, Ill	J. Sanders & Ben Sanders, d/b as Sanders Bros.	(WCLS)	100	
KWCR	Cedar Rapids, Iowa	Harry F. Paar	(KFGQ, KFJY)	100	
KFJY	Ft. Dodge, Iowa	C. S. Tunwall	(KFGQ, KWCR)	100	
KFGQ	Boone, Iowa	Boone Biblical College	(KWCR, KFJY)	100	
KGFW	Ravenna, Nebr	Otto F. Sothman & Roy H. McConnell		100	
WBOW	Terre Haute, Ind	Banks of Wabash, Inc		100	
WJAK	Marion, Ind	Marion Broadcast Co	(WLBC)	50	
WLBC	Muncie, Ind	Donald A. Burton	(WJAK)	50	
KGBX	St. Joseph, Missouri	Foster-Hall Tire Co		100	
WIBU	Poynette, Wis	William C. Forrest		100	
KFIU	Juneau, Alaska	Alaska Elec. Light & Power Co		10	
KFBK	Sacramento, Calif	James McClatchy Co		100	
KGMC	Jerome, Ariz	Chas. C. Robinson	(C. P. only)	100	
KGCX	Wolf Point, Mont	First State Bank of Vida		100 250	 LS (½ time)

KGEZ	Kalispell, Mont.	Kalispell Chamber of Commerce		100	
KFUP	Denver, Colo.	Fitzsimmons General Hospital U. S. Army	(KFXJ)	100	
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KFXJ	Edgewater, Colo.	H. G. Howell	(KFUP)	50	
KMED	Medford, Ore.	Mrs. W. J. Virgin		50	
KXRO	Aberdeen, Wash.	KXRO, Inc.		75	
KIT	Yakima, Wash.	Carl E. Haymond		50	
1320 *Kilocycles:*					
WADC	Tallmadge, Ohio	Allen T. Simmons		1 KW	
WSMB	New Orleans, La.	Saenger Theatres, Inc. & Maison Blanche Co.		500	
KGIQ	Twin Falls, Idaho	Radio Broadcasting Corp.	(KID)	250	
KGHF	Pueblo, Colo.	Curtis P. Ritchie & Joe E. Finch		250 500	LS
KGMB	Honolulu, Hawaii	Honolulu Brdcstg. Co., Ltd.	(C. P. only)	500	
KID	Idaho Falls, Idaho	Jack W. Duckworth C. P. to incr. pr. to 500 LS.	(KGIQ)	250	
1330 *Kilocycles:*					
WDRC	New Haven, Conn.	The Doolittle Radio Corp.		500	
WSAI	Cincinnati, Ohio T-Mason, Ohio	Crosley Radio Corp. (Lessee)		500	
WTAQ	Eau Claire, Wis. T-Township of Washington, Wis.	Gillette Rubber Co.	(KSCJ)	1 KW	
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KSCJ	Sioux City, Iowa C. P. to incr. pr. to 2½ KW-LS.	Perkins Bros. Co. (Publishers, The Sioux City Journal)	(WTAQ)	1 KW	
KGB	San Diego, Calif.	Pickwick Broadcasting Corp.		250	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1340 *Kilocycles:*					
WSPD	Toledo, Ohio	Toledo Brdcstg. Co.		500 1 KW	 LS
WCOA	Pensacola, Fla.	City of Pensacola, Fla.		500	
KFPY	Spokane, Wash.	Symons Brdcstg. Co. C. P. to incr. pr. to 1 KW.		500	
1350 *Kilocycles:*					
WBNY	New York, N. Y.	Baruchrome Corp.	(WMSG, WCDA, WKBQ).	250	
WMSG	New York, N. Y.	Madison Sq. Garden Broadcast Corp.	(WBNY, WCDA, WKBQ)	250	
WCDA	New York City T-Cliffside Park, N. J.	Italian Educational Brdcstg. Co., Inc.	(WBNY, WMSG, WKBQ).	250	
WKBQ	New York City	Standard Cahill Co., Inc.	(WBNY, WMSG, WCDA).	250	
KWK	St. Louis, Mo.	Greater St. Louis Brdcstg. Corp.		1 KW	
1360 *Kilocycles:*					
WSSH	Boston, Mass.	Tremont Temple Baptist Church	(WMAF, WLEX)	500	
WMAF	S. Dartmouth, Mass.	Round Hills Radio Corp.	(WLEX, WSSH)	500	
WLEX	Lexington, Mass.	Carl S. Wheeler, d/b as Lexington Air Stations	(WMAF, WSSH)	500	
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WQBC	Vicksburg, Miss.	W. B. Ford & E. M. Pace d/b as Delta Brdcstg. Co.		300	D
WJKS	Gary, Ind.	Johnson Kennedy Radio Corp.	(WGES)	500 1250	 D
WGES	Chicago, Ill.	Oak Leaves Brdcstg. Sta.	(WJKS) Sundays	500 1 KW	 LS
KFBB	Great Falls, Mont.	Buttrey Broadcast Inc. C. P. to incr. pr. to 1 KW-2½ WK LS on 1280 kycs.	(KGIR)	500 1 KW	 LS

KGIR	Butte, Mont	KGIR Incorporated	(KFBB)	500	
KGER	Long Beach, Calif	C. Merwin Dobyns C. P. to incr. pr. to 1 KW.	(KPSN)	250	
KPSN	Pasadena, Calif	Pasadena Star-News Pub. Co	(KGER)	1 KW	

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1370 *Kilocycles:*

WQDM	St. Albans, Vermont	A. J. St. Antoine	(C. P. only)	5	D
WMBO	Auburn, N. Y	George I. Stevens, tr. as Radio Service Laboratories		100	
WSVS	Buffalo, N. Y	Elmer S. Pierce, Principal, Seneca Vocational High School		50	
WPOE	Patchogue, N. Y	Nassau Broadcasting Corporation		100	
WCBM	Baltimore, Md	Baltimore Brdcstg. Corp		100 250	 LS
WBBL	Richmond, Va	Grace Covenant Pres. Church		100	

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WEHC	Emory, Virginia	Emory and Henry College		100	
WHBD	Mt. Orab, Ohio	F. P. Moler		100	
WHDF	Calumet, Mich	Upper Michigan Brdcstg. Co C. P. to increase power to 250 LS.		100	
WJBK	Ypsilanti, Mich	James F. Hopkins	(WIBM)	50	
WIBM	Jackson, Mich	C. L. Carrell	(WJBK)	100	
WRAK	Erie, Pa	Clarence R. Cummins		50	
WELK	Philadelphia, Pa	Howard R. Miller		100	
WFDV	Rome, Ga	Dolies Goings	(C. P. only)	100	
WRBJ	Hattiesburg, Miss	Woodruff Furniture Co., Inc		10	
WHBQ	Memphis, Tenn	Brdcstg. Station WHBQ, Inc		100	
WRBT	Wilmington, N. C	Wilmington Radio Assn		100	
KGFG	Oklahoma City, Okla	Faith Tabernacle Assn., Inc	(KCRC)	100	
KCRC	Enid, Oklahoma	Champlin Refining Co	(KGFG)	100 250	 LS
WMBR	Tampa, Florida	F. J. Reynolds		100	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1370 *Kilocycles*—Continued:					
KGCI	San Antonio, Texas	Sam Liberto, tr. as Liberto Radio Sales Co.	(KONO)	100	
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KONO	San Antonio, Texas	Eugene J. Roth	(KGCI)	100	
KGKL	San Angelo, Texas	KGKL, Incorporated		100	
KFLX	Galveston, Texas	George Roy Clough		100	
WGL	Ft. Wayne, Indiana	Fred C. Zeig (Allen Wayne Co.)		100	
WBTM	Danville, Virginia	L. H., R. G., and A. S. Clarke d/b as Clarke Electric Co.	(WLVA) (C. P. only)	100	
WLVA	Lynchburg, Virginia	Edward A. & Philip P. Allen	(WBTM) (C. P. only)	100	
KGDA	Dell Rapids, S. D.	J. R. Nelson, tr. as Home Auto Co. C. P. to move to Mitchell, S. D.		50	
KFJM	Grand Forks, N. D.	University of North Dakota		100	
KWKC	Kansas City, Missouri	Wilson Duncan, tr. as Wilson Duncan Brdcstg. Co.		100	(½ time)
WRJN	Racine, Wisconsin	Racine Broadcasting Corp.		100	
KGAR	Tucson, Arizona	Tucson Motor Service Co. C. P. to incr. pr. to 250 LS.		100	
KOH	Reno, Nevada	Jay Peters, Inc.		100	
KRE	Berkeley, California	First Cong. Church of Berkeley	(KZM)	100	
KLO	Ogden, Utah	Peery Building Co.		100 200	LS
KOOS	Marshfield, Ore.	H. H. Hanseth		100	
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KFBL	Everett, Wash.	Otto Leese & Robert Leese d/b as Leese Bros.	(KVL)	50	

KVL	Seattle, Wash.	Arthur C. Dailey	(KFBL)	100	
KFJI	Astoria, Ore.	KFJI Broadcasters, Inc.		100	
KGFL	Raton, N. M.	W. E. Whitmore		50	

1380 *Kilocycles:*

WSMK	Dayton, Ohio	Stanley M. Krohn, Jr.	(KQV)	200	
KQV	Pittsburgh, Pa.	Doubleday-Hill Elec. Co.	(WSMK)	500	
KSO	Clarinda, Ia.	Berry Seed Co.	(WKBH)	500	
WKBH	La Crosse, Wis.	Jos. Callaway, tr. as Callaway Music Co.	(KSO)	1 KW	

1390 *Kilocycles:*

WHK	Cleveland, Ohio T-Village of Seven Hills	Radio Air Service Corp.		1 KW	
KLRA	Little Rock, Ark.	Arkansas Brdcstg. Co.	(KUOA)	1 KW	
KUOA	Fayetteville, Ark.	University of Arkansas	(KLRA)	1 KW	
KOY	Phoenix, Ariz.	Nielson Radio & Sporting Goods Co.		500	

1400 *Kilocycles:*

WCGU	Brooklyn, N. Y.	U. S. Brdcstg. Corp.	(WSGH-WSDA, WLTH, WBBC)	500	
WSGH-WSDA	Brooklyn, N. Y.	Abraham Hass & Salvatore D'Angelo d/b as Amateur Radio Spec. Co.	(WCGU, WLTH, WBBC)	500	
WLTH	Brooklyn, N. Y.	Voice of Brooklyn, Inc.	(WCGU, WSGH-WSDA, WBBC)	500	
WBBC	Brooklyn, N. Y.	Brooklyn Brdcstg. Corp.	(WCGU, WSGH-WSDA, WLTH)	500	

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KOCW	Chickasha, Okla.	Okla. College for Women		250 500	 LS
WCMA	Culver, Ind.	Culver Military Academy	(WBAA, WKBF)	500	
WKBF	Indianapolis, Ind.	Indianapolis Brdcstg., Inc.	(WBAA, WCMA)	500	
WBAA	W. Lafayette, Ind.	Purdue University	(WCMA, WKBF)	500	

***List of Licensed Broadcasting Stations by Frequencies*—Continued.**

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1410 *Kilocycles:*					
WBCM	Bay City, Mich. Hampton Twp., Mich.	James E. Davidson		500	
KGRS	Amarillo, Texas	E. B. Gish (Gish Radio Service)	(WDAG)	1 KW	
WODX	Mobile, Ala. Springhill, Ala.	Scott Helt, Trustee Mobile Brdcstg. Corp. (C. P. only)	(WSFA)	500	
WSFA	Montgomery, Ala.	Howard E. Pill & S. G. Persons, d/b as Montgomery Brdcstg. Co. (C. P only)	(WODX)	 500	
WDAG	Amarillo, Texas	National Radio Brdcstg. Corp.	(KGRS)	250	
KFLV	Rockford, Ill.	A. T. Frykman	(WHBL)	500	
WHBL	Sheboygan, Wis.	Press Pub. Co. & C. L. Carrell	(KFLV)	500	
1420 *Kilocycles:*					
WHDL	Tupper Lake, N. Y.	George Franklin Bissell		10-D	
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WMRJ	Jamaica, N. Y.	Peter J. Prinz	(⅓ time)	10	
WLEY	Lexington, Mass.	Carl S. Wheeler, d/b as Lexington Air Stations	(½ time)	100 250	 LS
WTBO	Cumberland, Md.	Associated Brdcstg. Corp. C. P. to incr. pr. to 110 w.		50	
WILM	Wilmington, Del.	Delaware Brdcstg. Co., Inc.		100	
WEDH	Erie, Pa.	Erie Dispatch-Herald Brdcstg. Corp.		30	
WMBC	Detroit, Mich.	Mich. Brdcstg. Co.		100 250	 LS
WKBP	Battle Creek, Mich.	Enquirer News Co.		50	
WHIS	Bluefield, W. Va.	Daily Telegraph Printing Co.		100	
WIBR	Steubenville, Ohio	George W. Robinson		50	

WFDW	Talladega, Ala.	Raymond C. Hammett (C. P. only)		100	
WJBO	New Orleans, La.	Valdemar Jensen		100	
KTAP	San Antonio, Tex.	Alamo Broadcasting Co.		100	
KTUE	Houston, Texas	William John Uhalt (Uhalt Electric)		100	
KFYO	Abilene, Texas	T. E. Kirksey, tr. as Kirksey Bros.		100 250	 LS
WSPA	Spartanburg, S. C.	Virgie V. Evans, tr. as "The Voice of South Carolina" (C. P. only)		100 250	 LS
KICK	Red Oak, Iowa	Red Oak Radio Corp.		100	

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WIAS	Ottumwa, Iowa	Morris W. & James F. Poling d/b as Poling Electric Co.		100	
WLBF	Kansas City, Kans.	Everett L. Dillard		100	
WMBH	Joplin, Mo.	Edwin Dudley Aber		100 250	 LS
KLPM	Minot, N. D.	E. C. Reineke		100	
WEHS	Evanston, Ill.	Victor C. Carlson	(WKBI, WHFC)	100	
WHFC	Cicero, Ill.	Triangle Broadcasters, Inc.	(WKBI, WEHS)	100	
WKBI	Chicago, Ill.	Fred L. Schoenwolf	(WHFC, WEHS)	50	
KFIZ	Fond du Lac, Wis.	The Reporter Printing Co.		100	
KFXY	Flagstaff, Ariz.	Mary M. Costigan		100	
KGIX	Las Vegas, Nev.	J. M. Heaton (C. P. only)		100	
KFQU	Holy City, Calif.	W. E. Riker	(KGGC)	100	
KFXD	Jerome, Idaho	Frank E. Hurt, tr. as Service Radio Company		50	
KGIW	Trinidad, Colo.	Leonard E. Wilson		100	
KGKX	Sandpoint, Idaho	C. E. Twiss & F. H. McCann		100	
KGGC	San Francisco, Calif.	The Golden Gate Broadcasting Co.	(KFQU)	50	

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KXL	Portland, Oregon	KXL Broadcasters, Inc.	(KFIF)	100	
KFIF	Portland, Oregon	Benson Polytechnic School	(KXL)	100	
KORE	Eugene, Ore.	Frank L. Hill & C. G. Phillips d/b as Eugene Broadcast Station		100	
KFQW	Seattle, Wash.	KFQW, Inc.		100	

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1430 *Kilocycles:*					
WHP	Harrisburg, Pa. T-Lemoyne, Pa.	Pennsylvania Brdcstg. Co. (W. S. McCachren, Pres.)	(WBAK, WCAH)	500	
WBAK	Harrisburg, Pa. C. P. to incr. pr. to 1 KW-LS.	Penna. State Police, Commonwealth of Penna.	(WHP, WCAH)	500	
WCAH	Columbus, Ohio	Commercial Radio Service Co.	(WHP, WBAK)	500	
WGBC	Memphis, Tenn.	First Baptist Church	(WNBR)	500	
WNBR	Memphis, Tenn.	John Ulrich	(WGBC)	500	
KECA	Los Angeles, Calif.	Pacific Development Radio Company		1 KW	
1440 *Kilocycles:*					
WHEC-WABO	Rochester, N. Y.	Hickson Electric & Radio Corp.	(WOKO)	500	
WOKO	Poughkeepsie, N. Y. T-Mt. Beacon, N. Y.	H. E. Smith & R. M. Curtis d/b as Hudson Valley Brdcstg. Co.	(WHEC-WABO)	500	
WCBA	Allentown, Pa.	E. Bryan Musselman	(WSAN)	250	
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WSAN	Allentown, Pa.	Allentown Call Pub. Co., Inc.	(WCBA)	250	
WNRC	Greensboro, N. C.	Wayne M. Nelson		500	
WTAD	Quincy, Ill.	Ill. Stock Medicine Brdcstg. Corp.	(WMBD)	500	
WMBD	Peoria Hgts., Ill.	E. M. Kahler (owner Peoria Hgts. Radio Lab.)	WTAD	500 1 KW	 LS
KLS	Oakland, Calif.	E. N. & S. W. Warner d/b as Warner Bros.		250	D
1450 *Kilocycles:*					
WBMS	Hackensack, N. J.	WBMS Brdcstg. Corp.	See Note	250	

WNJ	Newark, N. J.	Radio Investment Co.	" "	250
WIBS	Jersey City, N. J	New Jersey Brdcstg. Corp.	" "	250
WKBO	Jersey City, N. J	Camith Corp.	" "	250
WSAR	Fall River, Mass.	Doughty & Welch Elec. Co. Inc.		250

Note: WBMS, WNJ, WIBS and WKBO divide time with each other.

WFJC	Akron, Ohio	W. F. Jones Brdcstg., Inc.	(WCSO)	500
WCSO	Springfield, Ohio	Wittenberg College	(WFJC)	500
WTFI	Toccoa, Ga.	Toccoa Falls Institute		500
KTBS	Shreveport, La.	S. R. Elliott & A. C. Steere		1 KW

1460 *Kilocycles:*

WJSV	Mt. Vernon Hills, Va.	Independent Pub. Co.		10 KW

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KSTP	St. Paul, Minn. T-Westcott, Minn.	National Battery Brdcstg. Co.		10 KW

1470 *Kilocycles:*

WKBW	Buffalo, N. Y. T-Amherst, N. Y.	Churchill Evangelistic Assn. Inc.		5 KW
KFJF	Oklahoma City, Okla.	National Radio Mfg. Co.		5 KW
KGA	Spokane, Wash.	Northwest Brdcstg. System, Inc.		5 KW

1480 *Kilocycles:*

WCKY	Covington, Ky. Crescent Springs, Ky.	L. B. Wilson, Inc.	(WCHI, WJAZ, WORD)	5 KW
WJAZ	Mt. Prospect, Ill.	Zenith Radio Corp.	(WCHI, WORD, WCKY)	2½ KW
WORD	Chicago, Ill. T-Batavia, Ill.	Peoples Pulpit Assn.	(WJAZ, WCHI, WCKY)	5 KW
WCHI	Chicago, Ill. T-Deerfield, Ill.	Radiophone Brdcstg. Corp.	(WJAZ, WORD, WCKY)	5 KW

List of Licensed Broadcasting Stations by Frequencies—Continued.

Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
1490 *Kilocycles:*					
WFBL	Syracuse, N. Y.	The Onondago Co.		1 KW	
		(Also operates ½ time with 750 w. on 900 kc.)			
WTNT	Nashville, Tenn.	Tennessee Pub. Co.	(WLAC)	5 KW	
WLAC	Nashville, Tenn.	Life & Casualty Ins. Co.	(WTNT)	5 KW	
KPWF	Westminster, Calif.	Pacific-Western Brdcstg. Fed.		5 to 10 KW	
		(C. P. only)			
1500 *Kilocycles:*					
WMBA	Newport, R. I.	LeRoy Joseph Beebe		100	

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Call letters.	Main studio location.	Owner.	Shares with.	Power, watts.	Time & power limitations.
WLOE	Boston, Mass.	Boston Broadcasting Co.	(WMES)	100	
	T-Chelsea, Mass.			250	LS
WMES	Boston, Mass.	Boston Broadcasting Co.	(WLOE)	50	
WNBF	Binghamton, N. Y.	Howitt-Wood Radio Co., Inc.		50	
		C. P. to incr. pr. to 100 w.			
WMBQ	Brooklyn, N. Y.	Paul J. Gollhofer	(WLBX, WCLB, WWRL).	100	
WCLB	Long Beach, N. Y.	Arthur Faske	(WLBX, WMBQ, WWRL).	100	
WLBX	Long Island City, N. Y.	John N. Brahy	(WMBQ, WCLB, WWRL).	100	
WWRL	Woodside, N. Y.	L. I. Broadcasting Corp.	(WMBQ, WLBX, WCLB).	100	
WKBZ	Ludington, Mich.	K. L. Ashbacker		50	
WMPC	Lapeer, Mich.	First Meth. Protestant Church of Lapeer		100	
WPEN	Philadelphia, Pa.	Wm. Penn Broadcasting Co.		100	
				250	LS

WMBJ	Penntownship, Pa.	Rev. John W. Sproul	100	
WOPI	Bristol, Tenn.	Wilson Radiophone Service Co.	100	
KGKY	Scottsbluff, Nebr.	Hilliard Co. Inc. (C. P. only)	100	
KGFI	Corpus Christi, Tex.	Eagle Brdcstg. Co., Inc.	100	
KUT	San Antonio, Tex. formerly KGDR	Rice Hotel (C. P. only) C. P. to move to Austin	100	
KGKB	Brownwood, Texas	E. M., C. T., & E. E. Wilson d/b as Eagle Publishing Co.	100	
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KTLC	Houston, Texas	Houston Printing Co.	100	
WKBV	Connersville, Ind.	Wm. O. Knox, Tr. as Knox Battery and Elec. Co.	100	
			150	LS
KPJM	Prescott, Ariz.	A. P. Miller & Geo. R. Klahn d/b as Miller & Klahn	100	
KVEP	Portland, Ore.	Wm. B. Schaeffer, tr. as Schaeffer Radio Co.	15	
KDB	Santa Barbara, Calif.	Santa Barbara Brdcstg. Co.	100	
KREG	Santa Ana, Calif.	Pacific-Western Brdcstg. Federation	100	
KUJ	Long View, Wash.	Columbia Brdcstg. Co., Inc. C. P. issued to incr. pr. to 100 w. sharing with KVEP.	10	
KGMD	Roswell, N. M.	Dispatch Pub. Co. (C. P. only)	100	

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Federal Radio Commission, Washington, D. C.

April 3, 1930.

The following is a list of changes and corrections to the Broadcast Call Letter List of February 3, 1930, and Addenda Sheet of March 3, 1930.

Changes have been underscored.

Call letter.	Studio location.	Owner.	Shares with	Power watts.	Kc.	Time and pr. limitations.
WAAT	Jersey City, N. J	Bremer Brdcstg. Corp		300 (formerly on 1070 kc.)	*940*	Day till 6 p. m., *E. S. T.*
WACO	Waco, Texas	*Central Texas Brdcstg. Co. Inc*	(KSAT)	1 KW	1240	
WBBS	Boston, Mass. Formerly WMES	Boston Brdcstg. Co	(WLOE)	50	1500	
WGBF	*Glens Falls, N. Y.* *C. P. Only*	*W. Neal Parker & Herbert H. Metcalfe*		*50*	*1370*	
WBMS	Hackensack, N. J	WBMS Brdcstg Corp	(WNJ, WKBO, *WHOM*)	250	1450	
WCLO	Kenosha, Wis	*WCLO Radio Corporation*		100	1200	
WCOC	*Meridian, Miss*	*H. B. Holmes, Jr. & H. B. Holmes, Sr. d/b as* *Crystal Oil Company* (Relicensed)		*500* *1 KW*	*880*	*LS*
WCOH	Yonkers, N. Y. T-Greenville, N. Y.	Westchester Brdcstg. Corp	(WJBI, WGBB, *WMRJ*)	100	1210	
WDAH	El Paso, Texas	*E. E., C. T., E. M. & Ernest Wilson d/b as Eagle Broadcasting Co*	(KTSM)	100	1310	
WEAI	Ithaca, N. Y	Cornell University		*1 KW*	1270	D

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Call letter.	Studio location.	Owner.	Shares with	Power watts.	Kc.	Time and pr. limitations.
WEHS	Evanston, Ill	*WEHS, Incorporated*	(WKBI, WHFC)	100	1420	
WELL	Battle Creek, Mich Formerly WKBP	Enquirer-News Co		50	1420	

WEMC	Berrien Springs, Mich.	*George W. Trendle*		1 KW	590	D
WFDW	Talladega, Ala	Raymond C. Hammett *(Now Licensed)*		100	1420	
WGBB	Freeport, N. Y	Harry H. Carman	(WJBI, WCOH, *WMRJ*)	100	1210	
WHDF	Calumet, Mich	Upper Michigan Brdcstg. Co		100	1370	
		Licensed for		*250*		*LS*
WHOM	Jersey City, N. J Formerly WIBS	New Jersey Brdcstg. Corp	(WBMS, WNJ, WKBO)	250	1450	
WJBI	Red Bank, N. J	Robert S. Johnson	(WGBB, WCOH, *WMRJ*)	100	1210	
WJBK	Ypsilanti, Mich	*James F. Hopkins, Inc*		50	1370	
WJKS	Gary, Ind	Johnson-Kennedy Radio Corp		*1 KW*	1360	
			(WGES)	1¼ KW		LS
WKBB	Joliet, Ill	*Sanders Bros. Radio Station*	(WCLS)	100	1310	
WKBF	Indianapolis, Ind *T-Clermont, Ind.*	Indianapolis Brdcstg. Inc	(WBAA, WCMA)	500	1400	
WKBO	Jersey City, N. J	Camith Corp	(WBMS, WNJ, *WHOM*)	250	1450	

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WKRC	Cincinnati, Ohio	WKRC, Incorporated		*1 KW*	550	
WLAP	Louisville, Ky	American Brdcstg. Corp. of Kentucky *(C. P. to incr. pr. to 100 w.-night, 250 w. LS)*		30	1200	
WLBX	L. I. City, N. Y	John N. Braby	(*WMIL*, WWRL, WMBQ)	100	1500	
WLEX	Lexington, Mass.	Carl S. Wheeler, tr. as The Lexington Air Stations *(C. P. install 1 KW equipment)*	(WMAF, WSSH)	500	1410	

List of Changes and Corrections, etc.—Continued.

Call letter.	Studio location.	Owner.	Shares with	Power watts.	Kc.	Time and pr. limitations.
WLOE	Boston, Mass. T-Chelsea, Mass.	Boston Brdcstg. Co	*(WBBS)*	100 250	1500	LS
WMAN	Columbus, Ohio	*John Hess & Emanuel M. Kun d/b as General Broadcasting Co*		50	1210	
WMAQ	Chicago, Ill T-Addison, Ill.	*WMAQ, Incorporated*		5 KW	670	
WMBQ	Brooklyn, N. Y	Paul J. Gollhofer	(*WMIL*, WWRL, WLBX)	100	1500	
WMIL	Long Beach, N. Y Formerly WCLB	Arthur Faske	(WWRL, WLBX, WMBQ)	100	1500	
WMRJ	Jamaica, N. Y	Peter J. Prinz	(*WGBB*, *WJBI*, *WCOH*)	10	*1210*	
			(formerly on 1420 kc.)			
WNBF	Binghamton, N. Y.	Howitt-Wood Radio Co., Inc	Licensed for.	*100*	1500	
WNBJ	Knoxville, Tenn	*Stuart Brdcstg. Corp*		50	1310	
WNBR	Memphis, Tenn	*Memphis Broadcasting Co*	(WGBC)	500	1430	
WNJ	Newark, N. J	Radio Investment Co	(WBMS, *WHOM*, WKBO)	250	1450	
WOPI	Bristol, Tenn	*Radiophone Brdcstg. Station WOPI, Inc*		100	1500	
171						
WRAF	La Porte, Ind	*Charles Middleton*	(WWAE)	100	1200	
WRAK	Erie, Pa	Clarence R. Cummins *(C. P. to move to Williamsport, Pa.)*		50	1370	

	Roanoke, Va	Richmond Development Corp. (½ *time*) (now licensed)	250	*1410*	
WWRL	Woodside, N. Y	Long Island Brdcstg. Corp. (WMBQ, WLBX, *WMIL*)	100	1500	
KBPS	Portland, Oregon Formerly KFIF	Benson Polytechnic School (KXL)	100	1420	
KBTM	Paragould, Ark	W. J. Beard (W. J. Beard's Temple of Music) (*Now licensed*)	100	1200	D
KCRJ	Jerome, Ariz Formerly KGMC	Charles C. Robinson (C. P. Only)	100	1310	
KDB	Santa Barbara, Calif	*Dwight Faulding*	100	1500	
KDLR	Devils Lake, N. D	*KDLR, Incorporated*	100	1210	
KFBB	Great Falls, Mont	Buttrey Broadcast, Inc	*1 KW*	*1280*	
		(Now licensed)	*2½ KW*		*LS*
KFIO	Spokane, Wash	Spokane Brdcstg. Corp	100	*1120*	*D*
		(Formerly on 1230)			
KFJB	Marshalltown, Iowa	Marshall Elec. Co. Inc. (½ time)	100	1200	
			250		*LS*
KFJZ	*Fort Worth, Texas*	*Margaret Meacham Hightower, Minnie Meacham Smith, Mary Meacham, Executrices of the Estate of H. C. Meacham, Deceased.* (Relicensed)	*100*	*1370*	
172					
KFLV	Rockford, Ill	*Rockford Broadcasters, Inc.* (WHBL)	500	1410	
KFXD	Jerome, Idaho	Frank E. Hurt, tr. as Service Radio Co. (*C. P. to move to Nampa, Idaho*)	50	1420	
KFYR	Bismarck, N. D	Hoskins-Meyer (KFDY) (*C. P. to incr. pr. to 1 KW on experimental basis*)	500	550	
KGAR	Tucson, Ariz	Tucson Motor Service Co	100	1370	
		Licensed for	*250*		*LS*
KGCI	San Antonio, Tex	*Radio Sam Broadcast Co. Inc.* (KONO)	100	1370	
KGDA	Dell Rapids, S. D	*Mitchell Broadcasting Corp.* (*C. P. to move to Mitchell, S. D.*)	50	1370	

List of Changes and Corrections, etc.—Continued.

Call letter.	Studio location.	Owner.	Shares with	Power watts.	Kc.	Time and pr. limitations.
KGDY	Oldham, S. D	J. Albert Loesch & Geo. W. Wright		15	1200	
		(C. P. to move to Huron & incr. pr. to 100 watts)				
KGFF	*Alva, Okla*	*D. R. Wallace (Owner KGFF Brdcstg. Co.)*		*100*	*1420*	
		(Relicensed)				
KGFI	Corpus Christi, Texas	Eagle Broadcasting Co., Inc		100	1500	
		(C. P. to incr. pr. to 250 W.-LS)				
KGFK ~~KFGK~~	Hallock, Minn	R. W. Lautzenheiser & O. R. Mitchell d/b as Lautzenheiser & Mitchell		50	1200	
		(C. P. to move to Moorhead & change frequency to 1500 kc.)				
KGMB	Honolulu, Hawaii	Honolulu Brdcstg. Co., Ltd		500	1320	
		(Now licensed)				
KGO	Oakland, Calif	*National Broadcasting Co., Inc*		7½ KW	790	
KLO	Ogden, Utah	Peery Building Co		100	1370	
		(C. P. to incr. pr. to 500 W on 1400 kc.)		200		LS
173						
KMPC	Beverly Hills, Calif Formerly KEJK	R. S. MacMillan		500	710	LT
KOA	Denver, Colo	*National Broadcasting Co., Inc*		12½ KW	830	
KONO	San Antonio, Texas	*Mission Broadcasting Co*	(KGCI)	100	1370	
KTBI	Los Angeles, Calif	Bible Inst. of Los Angeles	(KGEF)	750	1300	
		(C. P. to incr. pr. to 1 KW)				
KTLC	Houston, Texas	Houston *Broadcasting* Co		100	1500	
KTRH	*Houston, Texas*	Rice Hotel	(WTAW)	500	1120	
		(Now licensed)				
KVL	Seattle, Wash	*KVL, Incorporated*	(KFBL)	100	1370	
KWEA	Shreveport, La	*Hello World Brdcstg. Corp*		100	1210	
KWKH	Kennonwood, La	*Hello World Brdcstg. Corp*	(WWL)	10 KW	850	
KXL	Portland, Oregon	KXL Broadcasters, Inc	*(KBPS)*	100	1420	

174 Shortwave & Television Laboratory, Inc., Seventy Brookline Avenue, Boston, Massachusetts.

Television Station W1XAV.

Cable Address: Television Boston. Phone Commonwealth 3520.

This station received its experimental license on January fourteenth, 1930. The first regular program was transmitted January twenty-second, 1930. The period in between these dates was spent in making some small changes in the Transmitter and associated equipment.

Before going any further it would be appropriate to mention here that the Shortwave & Television Laboratory has developed a Television Receiver which can be used in the home and the experimental Television transmitting work was in conjunction with the development of this Receiver as well as for the benefit of the public who had built Televisors and wished to look in.

The balance of January was spent preparing for a big event which took place on February fifth. On that date we inaugurated the first synchronized voice and vision service in the world with WEEI, a local broadcast station transmitting the voice and W1XAV transmitting the picture. Certain of their programs beginning on that date are sent from our studio and we televise them over W1XAV. Synchronizing voice and vision had been done before but this was the first regular service, which of course is still continuing.

We transmit our pictures with a 48 hole disc at a speed of twenty pictures a second. Our aim has been to send and receive the best possible picture within these limits and then to take the next step which will be a 60 line picture at a speed of twenty-four pictures per second. Our
175 own Televisor is Universal and will receive from either standard. Another goal we had in mind was to Televise as much of a regular broadcast program as we could.

We have improved our picture from week to week so that when looking at one person in our Televisor now there is enough detail that it appears as though you were looking directly at the person through a reducing lens. Of course there is a pinkish background due to the Neon lamp. With the second idea in mind of televising as many subjects as possible, we have constructed our scanning equipment which is of the indirect type, so that it can be raised and lowered or swung around and the whole assembly can be wheeled up to the subjects. By this means we can televise different people, one after another, such as an orchestra sitting down, etc. We can also scan any area from two inches square to ten feet square with very small adjustments in the scanning equipment.

It should be mentioned that with a station of 500 Watts power located near a residential section some interference calls are bound to be had. During the three months period we have had about fifteen calls which have all been investigated and corrected at no expense to the customer. These calls come from people who either have crystal sets or single circuit sets in which case we instal a wave trap, or in the case of an owner of a modern broadcast receiver who has an oscillating R. F. stage which picks up a beat note from our station, as soon as the stage is neutralized
176 no trouble is experienced from interference. During each announcement we ask anybody who is picking us up on a broadcast receiver to call us or get in touch with us so we can remedy the trouble.

At the present time we are still developing synchronous sound and vision broadcasts and the technique connected with them. Our next big step is going to be the transmission of parts of a baseball game or a boxing match. This station is situated in front of Fenway Park and is very adaptable to experimenting with broadcasts of this type. We expect to try out our first broadcast of parts of a baseball game about June 1st.

We are also paying particular attention at the present time to the study of fading and other peculiar atmospheric conditions in the Television channel. We have a number of field stations who report receiving conditions to us daily.

Very shortly we are also going to try single side band transmission and not waste one half of the channel as is done in present Television broadcasting.

On the Television receiving end, we are working upon enlarging our present three inch picture to one from eight to twelve inches square and we expect within the next few months to show a working model.

177 *Log.*

Experimental Visual Station W1XAV, Owned and Operated by Shortwave & Television Laboratory, Inc., 70 Brookline Avenue, Boston, Mass.

January 22nd, 1930.

10.00 A. M. to 12.00 M. Transmited Half Tone Program of different people. Demonstrated to officials of WEEI 50 Watts Power. Made no speech announcement as speech amplifier was disconnected.

2.00 P. M. to 5.00 P. M. Transmitted Half Tone pictures of several subjects and some Black and White signs. Announced call letters, location and frequency at fifteen minute intervals and played several phonograph records for testing. 50 Watts Power.

7.00 P. M. to 11.00 P. M. Transmitted Half Tone Picture of a number of subjects. Announced call letters, location and frequency at regular intervals and played one test record. Voice reported from Stoneham Mass as louder than any local station. Power 300 Watts.

January 23rd, 1930.

7.30 P. M. to 9.30 P. M. Tested New Counterpoise instead of ground and with poor results. Changed back to ground. Report from Arlington that our stations was overlapping 2XCR Jersey City who are supposed to be 2150 KC. Checked our wave and found it was 2194 KC. Called Dept. of Commerce station at Hingham and they measured it as 2189 KC. Will have to split 100 KC band with 2XCR by agreement. 500 Watts Power. Could hear our signal over phone from Hingham very loud.

January 24th, 1930.

12.00 to 12.30 P. M. Was testing amount of commutator ripple from our receiving station. Power 500 Watts.

January 25th, 1930.

11.00 A. M. to 12.00 A. M. Was testing with carrier on air only.

12.45 P. M. to 3.30 P. M. Transmitted Half Tones of a number of subjects with a Power of 50 Watts.

178 9.30 P. M. to 10.00 P. M. Testing Field Strength. Announcements and two records. Power 500 Watts.

January 27th, 1930.

3.30 to 5.30 P. M. Transmitted Program with 50 Watts Power. Received call from Cambridge being received on S. W. Receiver.

7.00 to 11.00 P. M. Transmitted Program with 500 Watts Power. Received call from Audabon Road being picked up on broadcast receiver. No complaint.

January 28th, 1930.

2.15 to 5.00 P. M. Transmitted Half Tones of several subjects and made announcements at regular periods. 500 Watts Power.

8.00 to 11.00 P. M. Transmitted Half Tone of several subjects and made announcements at regular periods. 500 Watts Power. Received several phone calls from Shortwave customers who picked us up. Changed our frequency earlier in the day to 2180 KC upon advice from 2XCR Jersey City that they were 2120 KC. Listened to both stations in Stoneham and there was no interference. Atmospherics were terrible.

January 29th, 1930.

10.00 A. M. to 1.15 P. M. Transmitted Half Tone of different people with 50 Watts power. Gentlemen from New York who were at our reciving station and who had seen every Television showing to date said ours was clearest.

2.00 to 5.00 P. M. Transmitted Half Tones and made regular announcements.

11.00 P. M. to 2.00 A. M. Was testing with different powers and different subjects for different data regarding transmitting and receiving. From 9.30 to 10.00 P. M. a very strong Television signal was heard from unknown source. Sounded like a local but must have been 5 KW transmitter out of town.

January 30th, 1930.

12.30 P. M. to 5.00 P. M. Transmitted Half Tones and did some test work increasing radiation.

9.30 P. M. to 11.00 P. M. Transmitted Half Tones and increased percentage of modulation by new arrangement. Picture improved about 10% .

179 January 31st, 1930.

1.00 P. M. to 3.30 P. M. Transmitted Half Tone Program. Demonstrated to Henry Lane and Charles Burton.

February 1st, 1930.

Was not on air due to construction on amplifer and transmitter.

February 2nd, 1930.

8.00 to 10.00 P. M. Transmitted Half Tone of different subjects.

February 3rd, 1930.

10.00 to 11.30 P. M. Transmitted Half Tone program. Demonstrated to Mr. Von Valkenburg.

7.30 to 11.00 P. M. Transmitted Half Tone program. Received call from Mr. Putman who was getting our picture.

February 4th, 1930.

2.00 to 5.00 P. M. Transmitted Half Tone Program. Demonstrated to Messrs. Norris and Carpenter of the Herald.

7.00 to 11.00 P. M. Transmitted Half Tone Program. Received call from Mr. Putnam.

February 5th, 1930.

7.00 to 7.30 P. M. Broadcast Big Brother. Voice over WEEI. First time in the world for a regular program feature to be televised.

8.00 to 8.30. Broadcast Joyce Brother First program. Voice over WEEI.

8.30 to 9.00 P. M. Broadcast Half Tone Program to WEEI engineers.

February 6th, 1930.

2.00 to 5.00 P. M. Transmitted Half Tone Program. Received report from Monticello, N. Y., regarding reception in afternoon.

7.00 to 11.00 P. M. Transmitted Half Tone Program. Mr. Putnam recognized practically any object held up. Smith tuned in picture O. K.

11.00 to 11.15 P. M. Transmitted E. B. Rideout Weather Report. Voice over WEEI.

February 7th, 1930.

Was testing at different periods of the day.

10.30 P. M. Went on the air.

11.15 P. M. to 11.35 P. M. Televised two negro comedians and broadcast voice over WEEI.

180 February 8th, 1930.

5.00 P. M. Went on the air.

5.20 to 5.50 P. M. Broadcast food stimulators over WEEI. Signed off 6.00 P. M.

10.00 P. M. Went on air. 11.00 Broadcast Rideout Weather report.

11.15 P. M. Mrs. Geissler Bridge Talk over WEEI. Televised over W1XAV.

February 9th, 1930.

2.00 P. M. Went on air. 3.00 Televised Sam Curtis Radio Talk sent through WEEI. until 3.10.

3.30 to 3.40 P. M. Sam Curtis interviewed Hollis S. Baird on Television.

February 10th, 1930.

8.00 to 11.30 P. M. Broadcast Half Tone Program and made a number of demonstrations.

February 11th, 1930.

8.00 to 11.45 P. M. Broadcast Half Tone Program. E. F. A. and E. B. Rideout over WEEI.

February 12th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.

7.00 to 10.45 P. M. Broadcast Half Tone Program including Joyce Brothers over WEEI.

February 13th, 1930.

7.00 to 11.30 P. M. Broadcast Half Tone Program with a variety of subject. Voice Test over W1WX. Had a number of calls on Television results.

February 14th, 1930.

7.30 to 11.00 P. M. Broadcast Half Tone Program with a variety of subjects. Voice Test over WIWX. Had a number of calls on Television results.

February 15th, 1930.

5.00 to 6.30 P. M. Broadcast Half Tone Program including Foot Stimulators.

8.30 to 11.00 P. M. Broadcast Half Tone Program.

February 16th, 1930.

2.00 to 4.00 P. M. Broadcast half tone program including Sam Curtis Radio Chat over WEEI.

181 February 17th, 1930.

7.00 to 11.30 P. M. Broadcast Half Tone Program including Big Brother Club from 7.00 to 7.25 P. M.

February 18th, 1930.

7.00 to 7.25 P. M. Broadcast Big Brother.

8.00 to 10.00 P. M. Broadcast Half Tone Program. W1WX was on with 5 Watts. Made a number of demonstrations. Received a lot of phone calls including one from

Wakefield, Maine. Received voice on Radiola 46. Mr. Kolster, Local Radio Inspector, visited our station.

February 19th, 1930.

7.00 to 7.25 P. M. Big Brother Broadcast.

7.30 to 11.30 P. M. Broadcast Half Tone Program. Made a number of demonstrations.

February 20th, 1930.

7.00 to 7.25 P. M. Broadcast Big Brother with Chief White Eagle Indian. His headgear had a mirror which made televising difficult.

7.25 to 10.30 P. M. Broadcast Half Tone Program.

11.15 to 2.55 A. M. Broadcast Late Variety Program over WEEI.

February 21st —, 1930.

7.00 to 7.25 P. M. Big Brother Program.

7.30 to 11.30 P. M. Broadcast Half Tone Program. Made some field tests in Wollaston, Mass.

February 22nd, 1930.

3.00 to 8.00 P. M. Broadcast Half Tone Program and made some field tests with Wollaston, Mass.

February 23rd, 1930.

1.00 to 5.30 P. M. Broadcast Half Tone Program including Sam Curtis over WEEI. Report from Cohasset on picture.

6.00 to 8.00 P. M. Broadcast Half Tone Program.

February 24th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.

7.00 to 7.25 P. M. Big Brother over WEEI.

7.30 to 11.00 P. M. Broadcast Half Tone Program.

182 February 25th, 1930.

2.00 to 5.30 P. M. Broadcast Half Tone Program, making field test with our receiver in Cohasset.

7.00 to 7.25 P. M. Broadcast Big Brother.

7.30 to 11.15 P. M. Broadcast Half Tone Program. Made a Field test in Stoneham. Atmospherics Terrible.

February 26th, 1930.

11.00 A. M. to 11.00 P. M. Ran continuous including Big Brother. Made Field tests with Cohasset all day. Number of lookers in is increasing every day.

February 27th, 1930.

7.30 to 11.00 P. M. Broadcast Half Tone Program, including Big Brother Program from 7.00 to 7.25 P. M.

February 28th, 1930.

2.00 to 11.00 P. M. Broadcast Half Tone Program including Big Brother. Made Field tests in Arlington. Got some peculiar Fading results where picture faded rapidly from negative. Probably caused by unusual atmospheric conditions but could have been caused by transmitter.

11.30 to 12.45 P. M. Made some tests with Stoneham and got same fading results.

March 1st, 1930.

9.30 to 11.45 P. M. Broadcast Half Tone program including Rideout Weather Report and Mrs. Geissler over WEEI.

March 2nd, 1930.

Silent all day.

March 3rd, 1930.

7.00 to 7.25 Big Brother Program.

7.30 to 10.45 P. M. Broadcast Half Tone Program.

March 4th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.

7.00 to 7.25 P. M. Broadcast Big Brother.

7.30 to 11.00 P. M. Broadcast Half Tone Program

11.00 to 11.45 P. M. Transmitted Test Program.

183 March 5th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.
7.00 to 7.25 P. M. Broadcast Big Brother.
7.30 to 11.00 P. M. Broadcast Half Tone Program.

March 6th, 1930.

Television silent due to changes in scanning equipment which will allow us to televise more subjects.
7.00 to 7.25 P. M. Big Brother Program.
11.15 to 2.45 A. M. Big Brother Late Program.

March 7th, 1930.

Television silent due to changes in scanning equipment.
7.00 to 7.25 P. M. Broadcast Big Brother over WEEI.

March 8th, 1930.

Speech and Television Equipment silent all day.

March 9th 1930.

3.00 to 4.00 P. M. Broadcast Half Tone Program including Sam Curtis Radio Chat.

March 10th, 1930.

9.30 A. M. to 6.00 P. M. Broadcast Half Tone Program.
7.00 P. M. to 7.25 P. M. Broadcast Big Brother.
7.30 P. M. to 11 P. M. Broadcast Half Tone Program Made a lot of demonstrations.

March 11th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.
7.00 to 7.25 P. M. Broadcast Big Brother.
7.30 to 9.00 P. M. Broadcast Half Tone Program.

March 12th, 1930

7.00 to 7.25 P. M. Broadcast Big Brother Program.
7.30 to 9.00 P. M. Broadcast Half Tone Program.

March 13th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.
7.00 to 7.25 P. M. Broadcast Big Brother.
7.30 to 11.00 P. M. Broadcast Half Tone Program.

March 14th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.

184 March 14th, 1930 (cont'd).

7.00 to 7.25 P. M. Broadcast Big Brother Program.
7.30 to 11.00 P. M. Broadcast Half Tone Program.

March 15th, 1930.

7.00 to 11.00 P. M. Broadcast Half Tone Program.

March 16th, 1930.

2.45 to 3.45 P. M. Broadcast Half Tone Program including Sam Curtis over WEEI which was televised.

March 17th, 1930.

5.00 to 11.00 P. M. Broadcast Half Tone Program which included talk on Television by Professor Lunt for Big Brother program.

March 18th, 1930.

4.30 to 5.00 P. M. Made some tests on the air.
6.00 to 6.45 P. M. Broadcast Big Brother Program.
7.30 to 11.00 P. M. Broadcast Half Tone Program including a lot of experimenting.

March 19th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone Program.
6.00 to 6.30 P. M. Broadcast Big Brother Program.
7.30 to 11.00 P. M. Broadcast Half Tone Program.
11.30 to 12.00 A. M. Eperimented with different amounts of power.

March 20th, 1930.

11.00 A. M. to 2.00 P. M. Broadcast Half Tone Program.
2.00 to 5.00 P. M. Broadcast Half Tone Program.
6.00 to 6.30 P. M. Broadcast Big Brother Program.
7.00 to 11.00 P. M. Broadcast Half Tone Program. Demonstrated at Temple Israel Meeting to 400 people.

March 21st, 1930.

10.15 A. M. to 12.00 M. Demonstrated to 30 pupils of Sam Curtis Radio School.
1.30 P. M. to 4.45 P. M. Broadcast Half Tone Program.
6.00 P. M. to 6.30 P. M. Broadcast Big Brother.
7.00 P. M. to 10.05 P. M. Broadcast Half Tone Program.

March 22nd, 1930.

2.00 to 4.30 P. M. Broadcast Half Tone Program.
4.30 to 6.45 P. M. Transmitted different frequencies for testing Television. Receiver. Sent from 25 cycles to 60,000 cycles.

185 March 22nd, 1930 (cont'd.).

8.15 to 11.42 P. M. Broadcast Half Tone Program including a great number of subjects. Scanned some small areas about 3 inches square with good results.

March 23rd, 1930.

2.30 to 4.00 P. M. Broadcast Half Tone Program including Sam Curtis Radio Chat over WEEI.

March 24th, 1930.

2.00 to 11.42 P. M. Broadcast Half Tone Program including Big Brother Period of Professor Lunt's Talk on Television (6.00 to 6.30).

March 25th, 1930.

7.10 to 11.45 P. M. Broadcast Half Tone Program. Big Brother program from 6.00 to 6.30 P. M.
10.45 to 11.45 P. M. Made some adjustments on the Power Stage to increase efficiency.

March 26th, 1930.

6.00 to 6.30 P. M. Broadcast Big Brother Program.

7.00 to 11.00 P. M. Broadcast Half Tone Program.

March 27th, 1930.

6.00 to 6.30 P. M. Broadcast Big Brother Program.

7.00 to 11.00 P. M. Broadcast Half Tone Program.

March 28th, 1930.

6.00 to 6.30 P. M. Broadcast Big Brother Program.

7.00 to 11.00 P. M. Broadcast Half Tone Program. Made a lot of demonstrations.

March 29th, 1930.

6.30 to 8.30 P. M. Experimented with different changes in transmitter.

8.30 to 11.00 P. M. Broadcast Half Tone Program.

March 30th, 1930.

2.00 to 5.00 P. M. Broadcast Half Tone program including Sam Curtis Radio Chat over WEEI. Power 200 Watts. Antenna Current 5 amperes.

7.00 to 8.00 P. M. Did some experimenting with transmitter.

8.00 to 8.30 P. M. Transmitted some Half Tones.

March 31st, 1930.

10.00 A. M. to 12.00 M. Did some experimental work on the air.

12.00 M. to 5.00 P. M. Broadcast Half Tone Program.

6.00 P. M. to 6.30 P. M. Broadcast Big Brother over WEEI.

6.45 P. M. to 11.00 P. M. Broadcast Half Tone Program of a number of subjects.

186 In the Court of Appeals of the District of Columbia.

No. 5227.

SHORTWAVE & TELEVISION LABORATORY, INC., Appellant,

v.

FEDERAL RADIO COMMISSION.

Certificate.

I, James W. Baldwin, Secretary of the Federal Radio Commission, do hereby certify that the attached is a true copy of the order of the Commission entered in Docket No. 745 of the records of the Commission with reference to the application for construction permit of appellant in the above-entitled case.

Witness my hand and the seal of the Federal Radio Commission, this 24th day of June, 1930.

(Seal Federal Radio Commission.)

JAMES W. BALDWIN,
Secretary, Federal Radio Commission.

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187 Federal Radio Commission, Washington, D. C.

File No. 1-P-B-924. Docket No. 745.

In re Application of SHORTWAVE & TELEVISION LABORATORY, INC. (Station New), for Construction Permit.

Order.

The Commission having considered the evidence and the arguments presented to it in the above entitled case, heretofore heard and taken under advisement, and having found that public interest, convenience or necessity would not be served by granting said application,

It is ordered that said application be, and the same is hereby, denied; this order to be effective on May 16, 1930.

By order of the Federal Radio Commission.

[SEAL.] JAMES W. BALDWIN,
Secretary.

Dated May 16, 1930.
EWP:B.

188 In the Court of Appeals of the District of Columbia.

No. 5227.

SHORTWAVE & TELEVISION LABORATORY, INC., Appellant,

v.

FEDERAL RADIO COMMISSION, Appellee.

Designation of Record.

Now comes the appellant in the above entitled cause and directs the Clerk to print the record in said cause as filed, except the following parts thereof which the Clerk is directed to omit, namely:

1. General Order No. 55,
2. General Order No. 74,
3. List of broadcasting stations in the United States by frequencies.

The matter designated for omission is immaterial to the determination of the questions involved and the printing thereof would be a needless expense.

SHORTWAVE & TELEVISION
LABORATORY, INC.,
By BETHUEL M. WEBSTER, JR.
PAUL M. SEGAL.

Received a true copy of the foregoing designation this 31st day of July, 1930.

FEDERAL RADIO COMMISSION,
By D. M. PATRICK,
Assistant General Counsel.

189 [Endorsed:] In the Court of Appeals of the District of Columbia. No. 5227. Shortwave & Television Laboratory, Inc., Appellant, v. Federal Radio Commission, Appellee. Designation of Record. Law Offices Donovan & Bond, 1010 Shoreham Building, Washington, D. C. Court of Appeals, District of Columbia. Filed Aug. 9, 1930. Henry W. Hodges, Clerk.